晶復科技股份有限公司
A Test Lab Techno Corp.

低功率射頻電機試驗報告

報告編號	1901DR47
產品名稱	Multimedia device with Bluetooth and WLAN
申請廠商	Robert Bosch Car Multimedia GmbH
商標或廠牌	BOSCH
型式 (號)	AIVISBX0
產品試驗依據之標準	低功率射頻電機技術規範(LP0002) 107 年 1 月 10 日
報告發行日期	108 年 01 月 28 日

填發本型式認可報告之試驗機構 (認可代號)

晶復科技股份有限公司
33465 桃園市八德區長安街 140-1 號
Tel：03-2710188 / Fax：03-2710190

財團法人全國認證基金會
認證編號 ：1330
認證有效期間：105.09.06 ~ 108.09.05
認可能量範圍：低功率射頻電機技術規範(LP0002)
2.4 GHz 射頻電信終端設備技術規範(RTTE01)

實 驗 室 聲 明

本測試報告內之測試結果可藉由測試儀器設備之校正報告與本報告內所評估量測不確定度追溯至國家或國際標準。

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低功率射頻電機測試證明書

發行日期：108年01月28日

產 品 名 稱 ：Multimedia device with Bluetooth and WLAN

商 標 ：BOSCH

型 號 ：AIVISBX0

申 請 廠 商 ：Robert Bosch Car Multimedia GmbH

申請者地址 ：Robert-Bosch-Str. 200, 31139 Hildesheim, Germany

製 造 廠 商(1) ：Bosch Car Multimedia Portugal S.A.

製造商地址(1) ：Rua Max Grundig, 35 - Lomar; 4705-820 Braga, Portugal

製 造 廠 商(2) ：Robert Bosch (Malaysia) Sdn.Bhd.

製造商地址(2) ：Free Industtrial Zone, Phase 1, Bayan Lepas, Penang, 11900, Malaysia

待測物電壓 ：DC 13.5 V, 3.5 A
DC 9.0 V to 16.0 V (Extended voltage range)

試 驗 電 壓 ：DC 12 V

量 測 規 範 ：低功率射頻電機技術規範(LP0002) 107年1月10日

試驗實驗室 ：晶復科技股份有限公司(桃園市八德區長安街140-1號)

試驗受理日期 ：107 年 11 月 14 號

樣品接受日期 ：107 年 12 月 28 號

試驗完成日期 ：108 年 01 月 10 號

報告中所描述之測試結果與待測設備之架構組合，均根據實際量測情況作詳實的記錄。
由測試結果顯示，上述待測設備樣機確實已符合低功率射頻電機技術規範(LP0002)所規定的各項限制值。

特 此 證 明 ！

報告製作者：陳怡勳
(陳 怡 勳)

測 試 者：歐陽良相
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審 核 者：呂宗霖
(呂 宗 霖)

本測試報告所敘述之測試結果，僅對客戶所提供之測試樣品,在此測試報告所述及之測試條件下所實施之量測有效。

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1. 一般敘述

1.1 待測設備一般敘述

本敘述僅針對產品簡單說明之，其他詳細之規格請參考使用說明書。

產品名稱	Multimedia device with Bluetooth and WLAN
商標或廠牌	BOSCH
型號	AIVISBX0
額定電源	DC 13.5 V, 3.5 A DC 9.0 V to 16.0 V (Extended voltage range)
調變方式	GFSK, π/4-DQPSK, 8DPSK
頻率使用範圍	2402 MHz – 2480 MHz
天線型態	PCB Antenna
天線增益值	-0.4 dBi
RF 最大輸出功率	BR, GFSK: 9.75 dBm/ 0.00944 W EDR, π/4-DQPSK: 9.25 dBm/ 0.00841 W EDR, 8DPSK: 9.70 dBm/ 0.00933 W

輸出/輸入埠說明：

輸出/入埠		數量	介面內容說明
1	FM 2 FAKRA Port	1	連接至 N/A
2	FM/AM FAKRA Port	1	連接至 N/A
3	DAB/SXM FAKRA Port	1	連接至 N/A
4	GNSS FAKRA Port	1	連接至 N/A
5	RVC HSD Port	1	連接至 N/A
6	Display HSD Port	1	連接至 N/A
7	USB OTG/MCH USCAR30 Port	1	連接至 Notebook
8	TCU/Spare USB USCAR30 Port	1	連接至 N/A
9	TH18HW Main-connector Port	1	連接至車用電池
10	TH 40 Port	1	連接至 N/A
11	2nd USB/DSRC USCAR30 Port	1	連接至 N/A
12	Media In HSD Port	1	連接至 N/A
13	Ethernet HSD Port	1	連接至 N/A
14	ANC TH16 Port	1	連接至 N/A

待測設備外圍說明：

電源線類別	本產品透過 TH18HW Main-connector cable 供電
附屬裝置	無

1.2 其他相關聲明

本測試報告屬(以下選擇一種打■)

■	新設計之機型,申請新的型式檢驗認可的測試.
□	已取得型式檢驗認可之商品,因設計變更而重新測試 (變更內容請參考產品概述). 登錄號碼: XXXXXXXX

2. 量測儀器及測試配置說明

2.1 量測設備

For Conducted
Test Period: Jan. 10, 2019

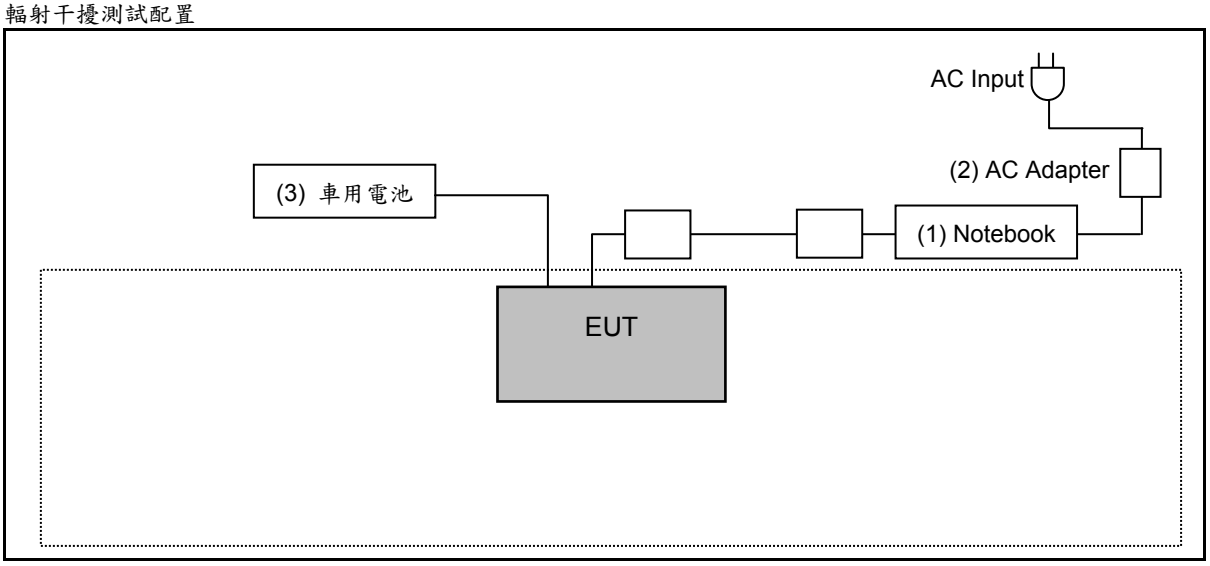
名 稱	廠 牌	型 號	序 號	本次校驗日期	校驗年限
Spectrum Analyzer	Agilent	N9020A	US47520902	09/25/2018	1 year
Power Meter	Anritsu	ML2495A	1135009	08/29/2018	1 year
Power Sensor	Anritsu	MA2411B	1126022	08/29/2018	1 year

For Radiated Emissions
Test Period: Dec. 28, 2018

名 稱	廠 牌	型 號	序 號	本次校驗日期	校驗年限
EXA Signal Analyzer	Keysight	N9010A	MY52221312	01/15/2018	1 year
Amplifier	Agilent	8449B	3008A02237	10/16/2018	1 year
Amplifier	Agilent	8447D	2944A11119	01/10/2018	1 year
Trilog Broadband Antenna	Schwarzbeck Mess-Elektronik	VULB9168	416	10/23/2018	1 year
天線	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	08/23/2018	1 year
Broadband Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	9170	9170-320	08/07/2018	1 year
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	03/13/2018	1 year

2.2 檢驗系統示意圖

輻射干擾測試配置



2.3 輔助測試之週邊設備描述

下列輔助設備或配件為測試中所使用，以形成一個代表性的受測系統。

週邊名稱		商標	型 號	序 號	電 源 線	備註
(1)	Notebook	HP	PROBOOK 4421s	CNF1182X1G	---	---
(2)	AC Adapter	HP	Series PPP012H-S	---	Non-Shielded, 1.7 m	INPUT : 100-240 VAC, 50/60 Hz, 1.7 A OUTPUT : 19.5 VDC, 3.34 A
(3)	車用電池	YUASA 湯淺	75D23L	---	---	---

2.4 測試軟體版本

Measurement Software			
No.	Description	Software	Version
1	Radiated Emission	EZ EMC	1.1.4.4

2.5 測試模式

Pre-Test Mode
Mode 1: Transmit Mode
Mode 2: BR,GFSK Continuous TX Mode
Mode 3: EDR, π/4-DQPSK Continuous TX Mode
Mode 4: EDR, 8DPSK Continuous TX Mode
Mode 5: Receiver Mode

Final-Test Mode
Mode 1: Transmit Mode
Mode 2: BR,GFSK Continuous TX Mode
Mode 4: EDR, 8DPSK Continuous TX Mode
Mode 5: Receiver Mode

2.6 量測不確定度

下列量測不確定水準是參照量測儀器 CISPR 16-4-2 所規定之不確定度。

Test Item	Frequency Range	Uncertainty (dB)
Conducted Emission	9 kHz ~ 150 kHz	2.7
	150 kHz ~ 30 MHz	2.7
Radiated Emission	9 kHz ~ 30 MHz	1.7
	30 MHz ~ 1000 MHz	5.7
	1000 MHz ~ 18000 MHz	5.5
	18000 MHz ~ 26500 MHz	4.8
	26500 MHz ~ 40000 MHz	4.8
Conducted Output Power	+0.27 dB / -0.28 dB	
RF Bandwidth	4.96 %	
Power Spectral Density	+0.71 dB / -0.77 dB	

2.7 試驗環境

產品測試時之實驗室環境條件如下:

項 目	測 試 項 目	需 求	實 際
溫度 Temperature (°C)	LP0002	10 - 40	26
濕度 Humidity (%RH)		10 - 90	60

中華民國實驗室認證體系
認可編號: 1330
測試實驗室名稱 : 晶復科技股份有限公司
TEL: 886-3-2710188 / FAX: 886-3-2710190
傳導干擾電壓量測地點: 桃園市八德區長安街 140-1 號.
輻射干擾場強量測地點: 桃園市八德區長安街 140-1 號.

3. 測試項目與結果判定總表

本測試報告之所有項目皆依據 NCC 低功率射頻電機技術規範(LP0002)之檢驗法。

BR/EDR 測試項目

項次	測試項目	適用規範	測試結果	量測設備	結果判定
1	輸出峰值功率	低功率射頻電機技術規範 3.10.1.2(1)(B)節	請參閱4.1節	請參閱2.1節	合格
2	電源線傳導干擾	低功率射頻電機技術規範 2.3節	請參閱4.2節	請參閱2.1節	不適用
3	場強輻射 (1 GHz以上)	低功率射頻電機技術規範 2.8節、2.9節、3.10.1.5節	請參閱4.3節	請參閱2.1節	合格
4	場強輻射其它不必要之訊號 (1 GHz以下)	低功率射頻電機技術規範 2.8節、2.9節、3.10.1.5節	請參閱4.3節	請參閱2.1節	合格
5	頻帶邊緣外之輻射發射	低功率射頻電機技術規範 3.10.1.5節	請參閱4.3節	請參閱2.1節	合格
6	非必要頻帶	低功率射頻電機技術規範 3.10.1.5節	請參閱4.4節	請參閱2.1節	合格
7	頻率範圍	低功率射頻電機技術規範 3.10.1.1節	請參閱4.5節	請參閱2.1節	合格
8	發射頻寬	低功率射頻電機技術規範 3.10.1.6(1)(A)節	請參閱4.6節	請參閱2.1節	合格
9	頻道數	低功率射頻電機技術規範 3.10.1.6(1)(A)(a)節	請參閱4.7節	請參閱2.1節	合格
10	跳頻系統之載波頻率頻道間隔	低功率射頻電機技術規範 3.10.1.6(1)(A)節	請參閱4.8節	請參閱2.1節	合格
11	跳頻系統之任一頻率佔用之平均時間	低功率射頻電機技術規範 3.10.1.6(1)(A)(a)節	請參閱4.9節	請參閱2.1節	合格
12	天線規格	低功率射頻電機技術規範 3.10.1.3(3)節、3.10.1.4節	請參閱4.10節	-------	合格

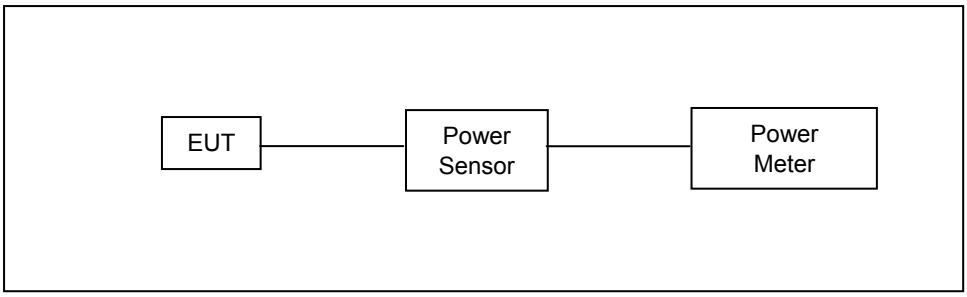
4. 測試項目表列

4.1 輸出峰值功率之量測

合格標準:

依據 NCC 低功率射頻電機技術規範(LP0002)之 3.10.1.2(1)(B)節之要求，所有操作於 2400-2483.5 兆赫且輸出功率應小於或等於 0.125 W 。

測試架構圖 ：



測試結果:

操作模式	：	Mode 2: BR,GFSK Continuous TX Mode		
頻道		輸出功率(Peak)		限制值
		dBm	W	W
低頻道	DH1	9.43	0.00877	≦0.125
	DH3	9.70	0.00933	≦0.125
	DH5	**9.75**	**0.00944**	≦0.125
中頻道	DH1	9.60	0.00912	≦0.125
	DH3	9.58	0.00908	≦0.125
	DH5	9.56	0.00904	≦0.125
高頻道	DH1	9.14	0.00820	≦0.125
	DH3	9.12	0.00817	≦0.125
	DH5	9.13	0.00818	≦0.125

操作模式	：	Mode 3: EDR, π/4-DQPSK Continuous TX Mode		
頻道		輸出功率(Peak)		限制值
		dBm	W	W
低頻道	2DH1	**9.25**	**0.00841**	≦0.125
	2DH3	9.20	0.00832	≦0.125
	2DH5	9.23	0.00838	≦0.125
中頻道	2DH1	9.23	0.00838	≦0.125
	2DH3	9.17	0.00826	≦0.125
	2DH5	9.13	0.00818	≦0.125
高頻道	2DH1	8.75	0.00750	≦0.125
	2DH3	8.70	0.00741	≦0.125
	2DH5	8.73	0.00746	≦0.125

操作模式	：	Mode 4:EDR, 8DPSK Continuous TX Mode		
頻道		輸出功率(Peak)		限制值
		dBm	W	W
低頻道	3DH1	9.63	0.00918	≦0.125
	3DH3	9.66	0.00925	≦0.125
	3DH5	**9.70**	**0.00933**	≦0.125
中頻道	3DH1	9.52	0.00895	≦0.125
	3DH3	9.54	0.00899	≦0.125
	3DH5	9.50	0.00891	≦0.125
高頻道	3DH1	9.09	0.00811	≦0.125
	3DH3	9.10	0.00813	≦0.125
	3DH5	9.09	0.00811	≦0.125

4.2 電源線傳導干擾之量測

合格標準:

依據 NCC 低功率射頻電機技術規範(LP0002)之 2.3 節，以市電為電源之低功率射頻電機，其傳導回電源線上頻率自 150 kHz 至 30 MHz 之射頻電壓 (在電源端子每一電源線對接地點) 不得超過下表所列之限值。測量時應經過 50 Ω//50 μH 之電源線阻抗模擬網路 (LISN)。頻率重疊處，以較低限值為準。

Frequency (MHz)	傳導限制值 (dBuV)	
	準峰值 (Quasi – peak)	平均值 (Average)
0.15 – 0.5	66 - 56 (註)	56 - 46 (註)
0.5 – 5	56	46
5 - 30	60	50

註：隨頻率之對數遞減。

測試方法 ：

測試場地為標準傳導測試場地。將待測物置於 0.8 米高的非金屬桌面，使其在工作狀態，待測物電源線接至電源線阻抗穩定網路上，從測試接收機記錄頻率由 0.15 MHz 至 30 MHz 之間之電源線傳導放射強度。

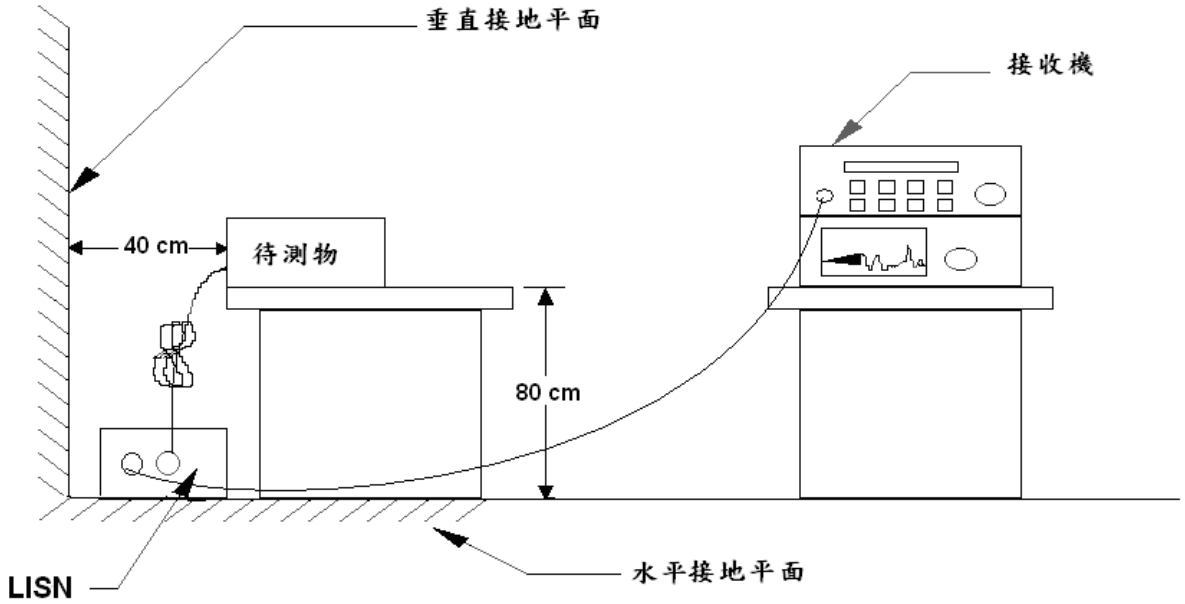
干擾值之計算

電源傳導干擾電壓之計算公式如下

結果值 = 儀器讀值(QP/AV) + 校正因子

其中校正因子為： 饋線損失 + 電源阻抗模擬網路損失

測試架構圖 ：



測試結果: 不適用，此產品透過車用電池供電。

4.3 場強輻射之量測

合格標準:

依據 NCC 低功率射頻電機技術規範(LP0002)之使用頻帶範圍外之任意 100 千赫 (kHz)內，發射機所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100 千赫(kHz)內的射頻功率，至少須衰減 20 dB，以射頻傳導或輻射方式測量。如發射機以依據 NCC 低功率射頻電機技術規範(LP0002)之 3.10.1.5(2)之峰值傳導輸出功率量測方式者，至少須衰減 30 dB。此外，落於第 2.7 節禁用頻段之輻射發射，應符合第 2.8 節之規定。

依據 NCC 低功率射頻電機技術規範第 2.7 節之規定,禁用頻段如下：

頻率(MHz)	頻率(MHz)	頻率(MHz)	頻率(MHz)
0.090～0.110	108.00～138.00	1660.0～1785.0	8025.0～8500.0
0.490～0.510	149.90～150.05	1805.0～1888.0	9000.0～9200.0
2.172～2.198	156.70～156.90	1885.0～1900.0	9300.0～9500.0
3.013～3.033	162.01～167.17	1905.0～1985.0	10600～12700
4.115～4.198	167.72～173.20	2010.0～2025.0	13250～13400
5.670～5.690	240.00～285.00	2110.0～2170.0	14470～14500
6.200～6.300	322.00～335.40	2200.0～2300.0	15350～16200
8.230～8.400	399.90～410.00	2310.0～2390.0	17700～21400
12.265～12.600	485.00～510.00	2483.5～2900.0	22010～23120
13.340～13.430	608.00～614.00	3260.0～3267.0	23600～24000
14.965～15.020	703.00～748.00	3332.0～3339.0	31200～31800
16.700～16.755	758.00～803.00	3345.8～3358.0	36430～36500
19.965～20.020	825.00～915.00	3500.0～4400.0	38600 以上
25.500～25.700	930.00～1240.0	4500.0～5250.0	
37.475～38.275	1300.0～1427.0	5350.0～5460.0	
73.500～75.400	1435.0～1626.5	7250.0～7750.0	

依據 NCC 低功率射頻電機技術規範第 2.8 節之規定,除本規範各章節另有放寬規定者外，其電場強度不得超過下表之限值，且其不必要之發射皆不得大於主波發射強度。各頻段重疊處，以較嚴格之限制值為準。

頻　率(MHz)	電場強度(μV/m)	測距(m)
0.009 - 0.490(含)	2,400/頻率(千赫)	300
0.490 (不含) – 1.705 (含)	24,000/頻率(千赫)	30
1.705(不含) – 30 (不含)	30	30
30 (含) – 88 (含)	100	3
88 (不含)- 216 (含)	150	3
216 (不含)- 960 (含)	200	3
960 (不含)以上	500	3

測試方法 ：

測試場地為開放測試場,將待測物置於 0.8 米高的非金屬桌面，使其在工作狀態，接收天線置於 3 米外相同的高度。待測物分別要垂直或水平放置，而且桌面要 360 度旋轉，另外接收天線也要從 1.0 米至 4.0 米升降變化，以找出最大的輻射電場強度，接收天線置於水平、垂直極向各執行測試一次。

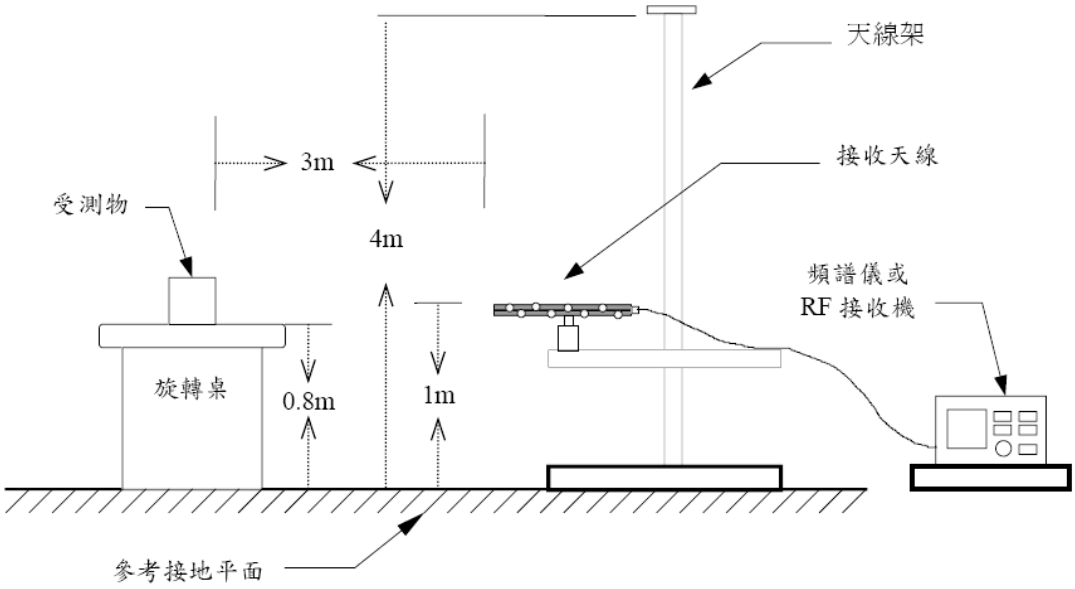
場強度之計算

場強之計算公式為：結果值 = 讀值 + 校正因子

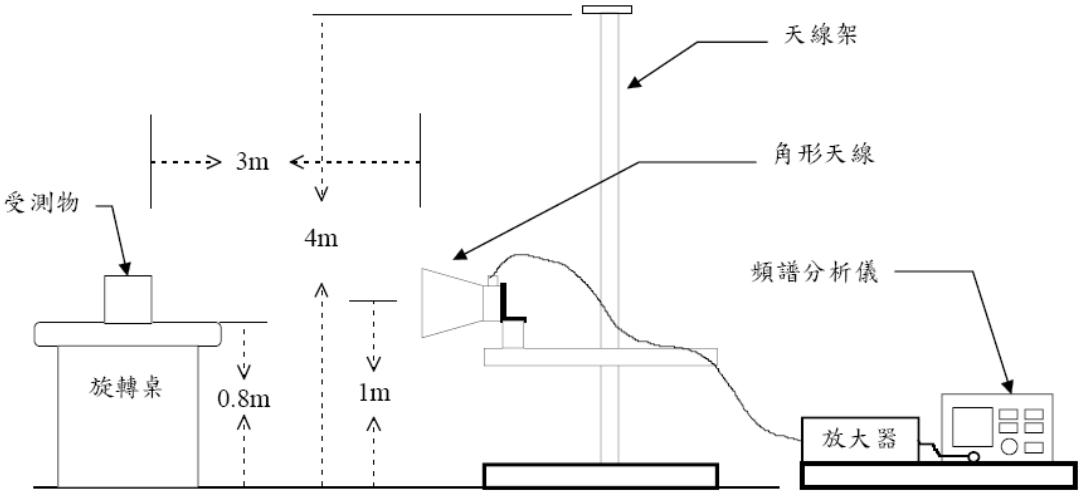
其中校正因子為： 天線因子+ 饋線損失 + 濾波器損失（若有使用） - 放大器增益（若有使用）

測試架構圖 ：

量測頻率低於 1 GHz 以下之測試配置



量測頻率高於 1 GHz 以上之測試配置

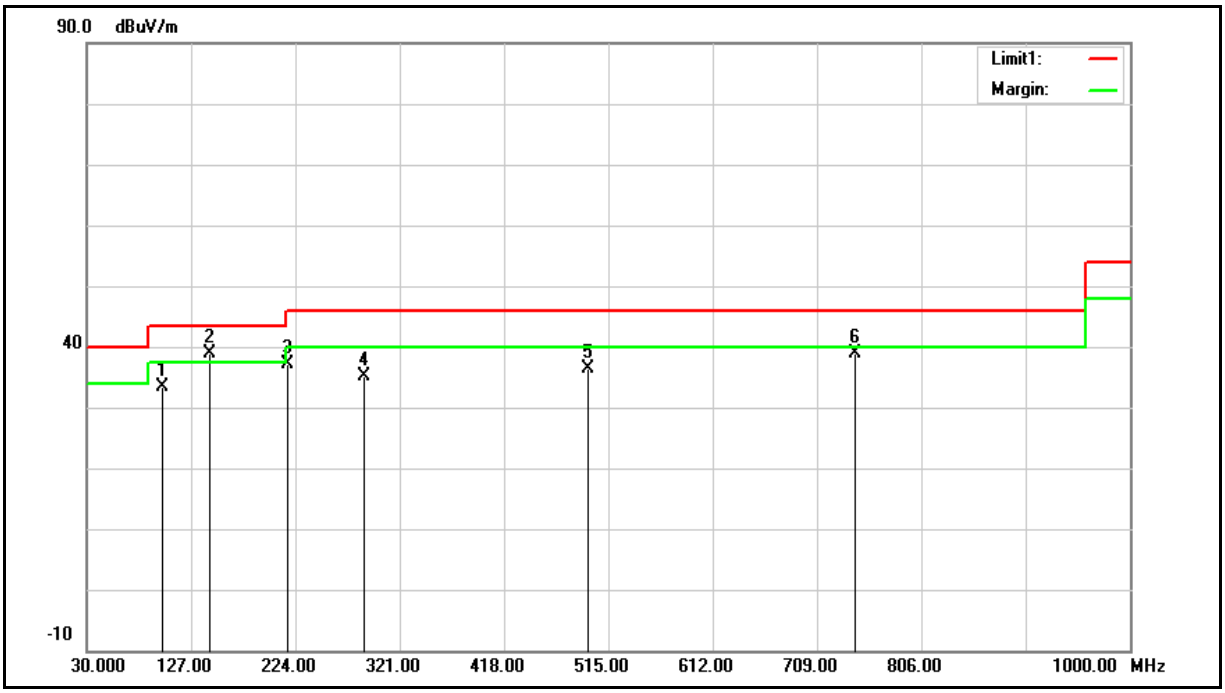


測試結果:

場強輻射之量測依據輸出峰值功率之量測結果取其最大值之操作模式為場強輻射測試模式。

其它不必要之訊號 (1 GHz 以下)

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Test Mode:	Mode 1		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	99.8400	44.69	-11.19	33.50	43.50	-10.00	QP
2	144.4600	44.86	-5.92	38.94	43.50	-4.56	QP
3	216.2400	44.55	-7.44	37.11	46.00	-8.89	QP
4	288.0200	39.07	-4.04	35.03	46.00	-10.97	QP
5	496.5700	36.39	0.11	36.50	46.00	-9.50	QP
6	744.8900	33.53	5.42	38.95	46.00	-7.05	QP

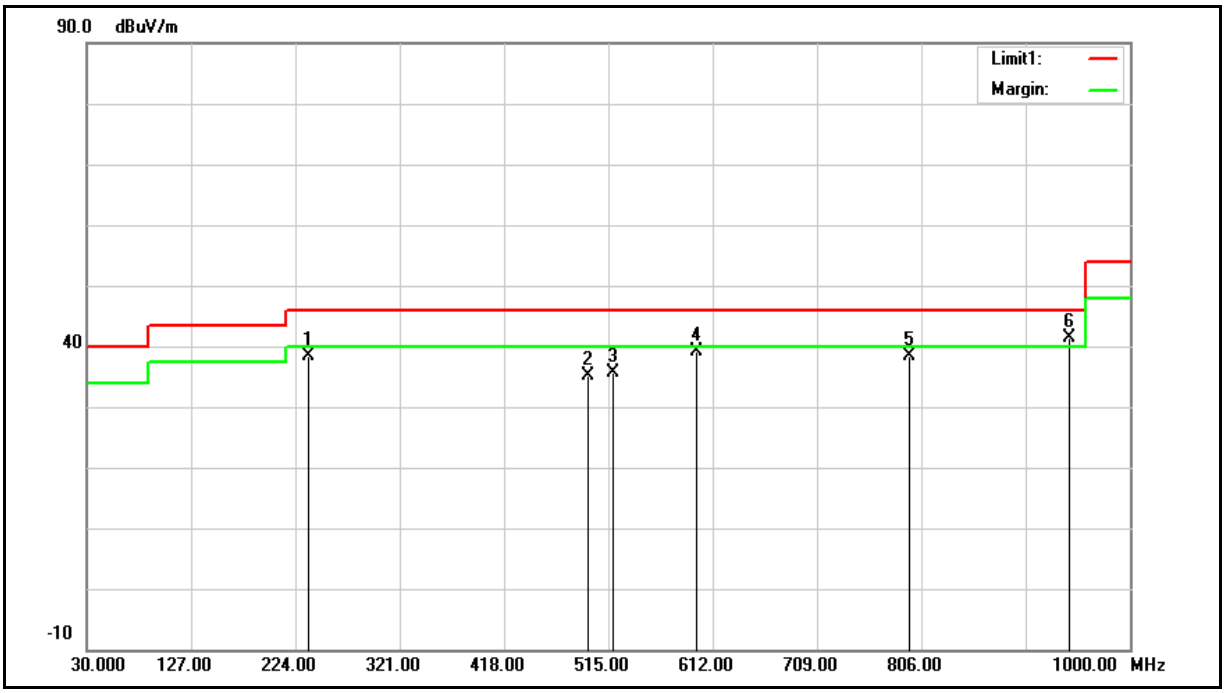
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 33.50 = -11.19 + 44.69

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Test Mode:	Mode 1		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	236.6100	44.82	-6.35	38.47	46.00	-7.53	QP
2	496.5700	34.92	0.11	35.03	46.00	-10.97	QP
3	518.8800	35.24	0.48	35.72	46.00	-10.28	QP
4	596.4800	36.65	2.38	39.03	46.00	-6.97	QP
5	795.3300	32.19	6.17	38.36	46.00	-7.64	QP
6	943.7400	32.67	8.74	41.41	46.00	-4.59	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

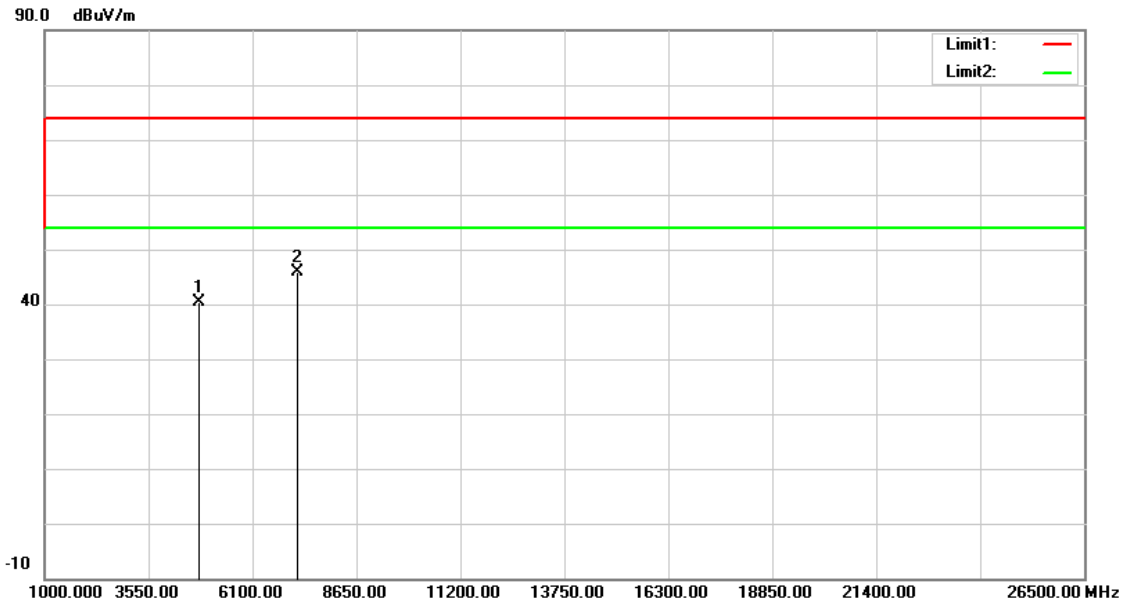
Example: 38.47 = -6.35 + 44.82

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

場強輻射量側 (1 GHz 以上)

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804.000	35.16	5.33	40.49	74.00	-33.51	peak
2	7206.000	34.03	11.79	45.82	74.00	-28.18	peak

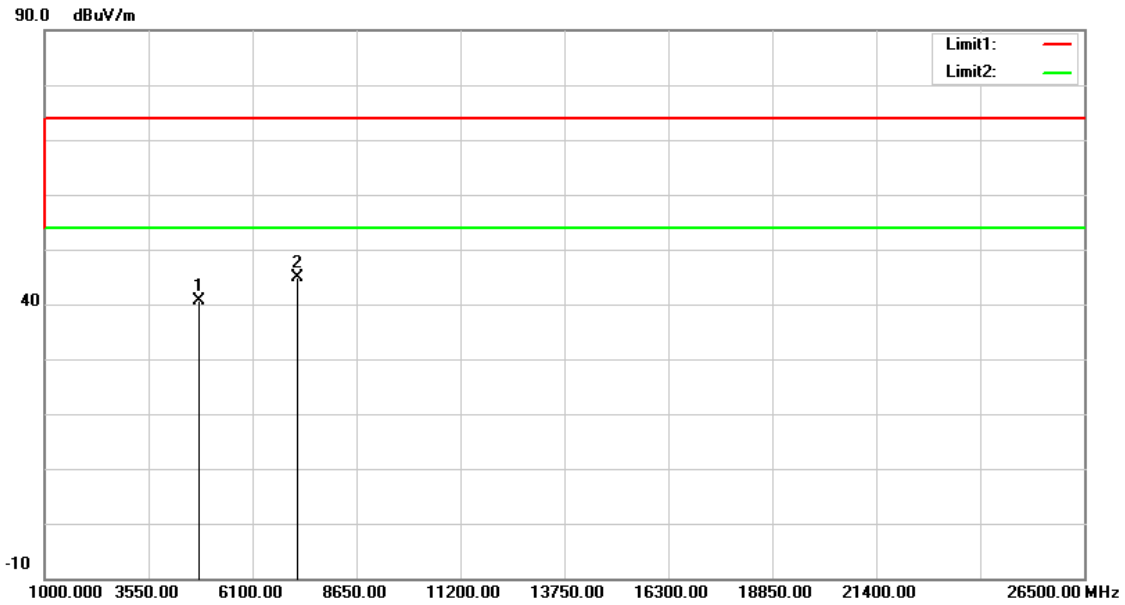
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 40.49 = 5.33 +35.16

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804.000	35.26	5.33	40.59	74.00	-33.41	peak
2	7206.000	33.14	11.79	44.93	74.00	-29.07	peak

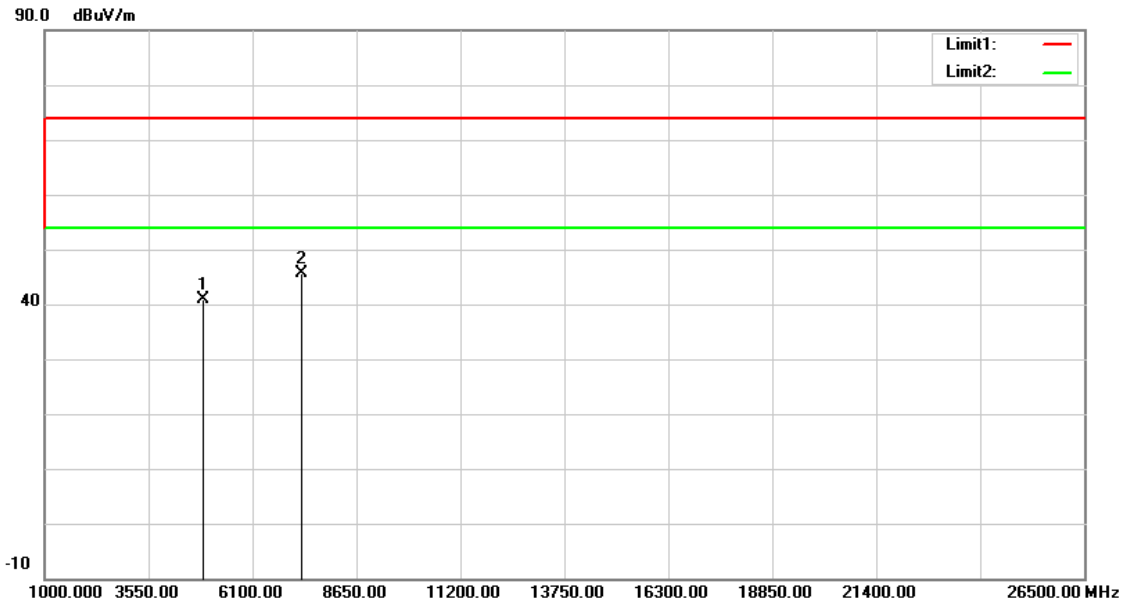
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 40.59 = 5.33 + 35.26

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2441 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



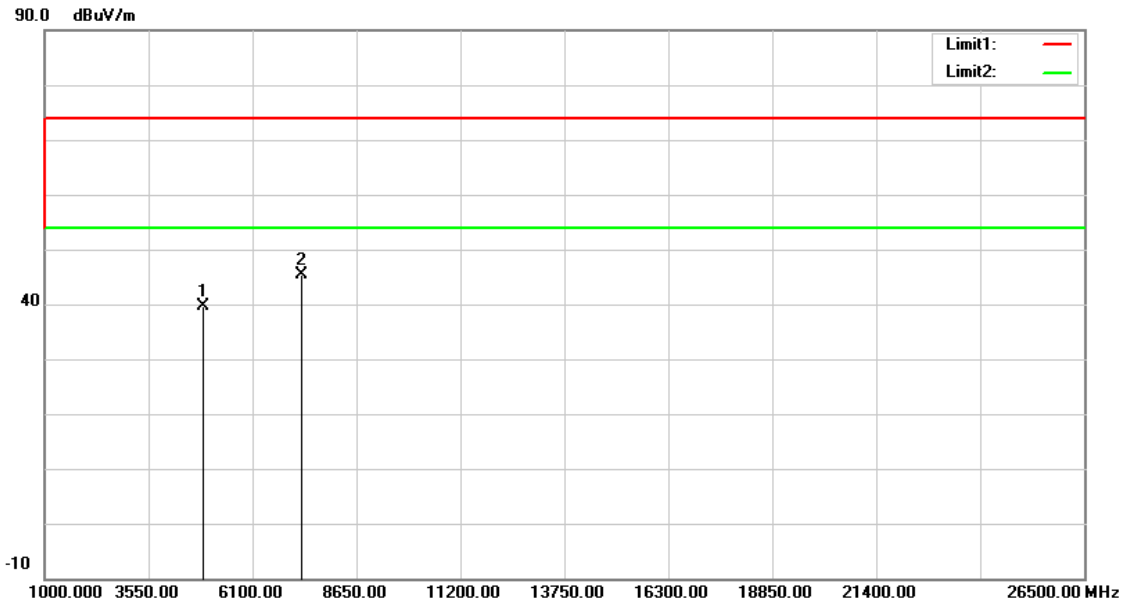
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4882.000	35.40	5.48	40.88	74.00	-33.12	peak
2	7323.000	33.53	12.17	45.70	74.00	-28.30	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2441 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



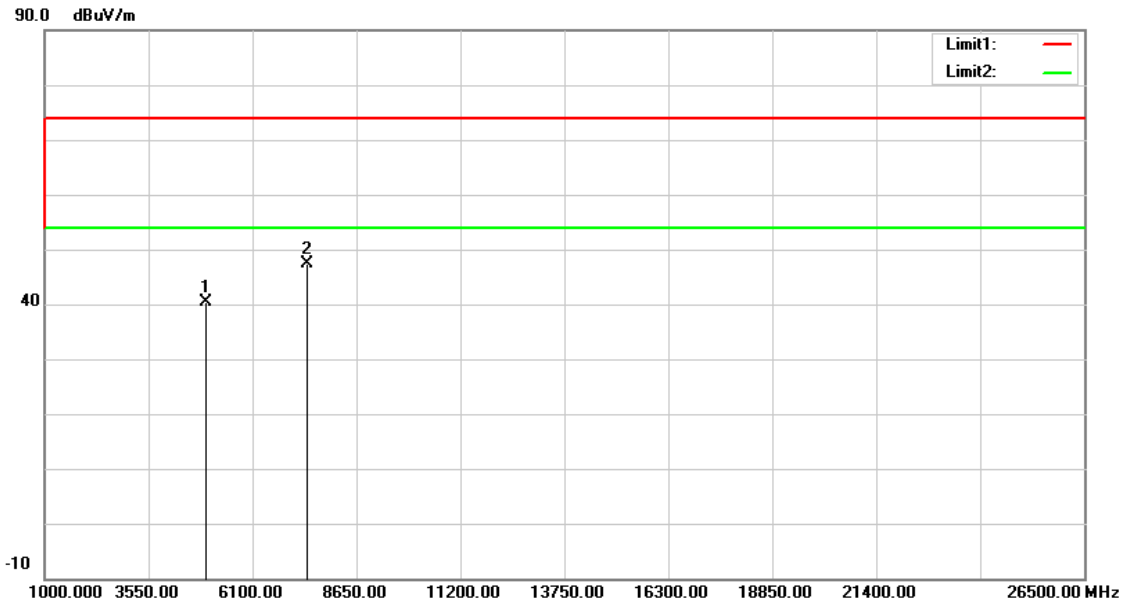
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4882.000	34.15	5.48	39.63	74.00	-34.37	peak
2	7323.000	33.26	12.17	45.43	74.00	-28.57	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2480 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



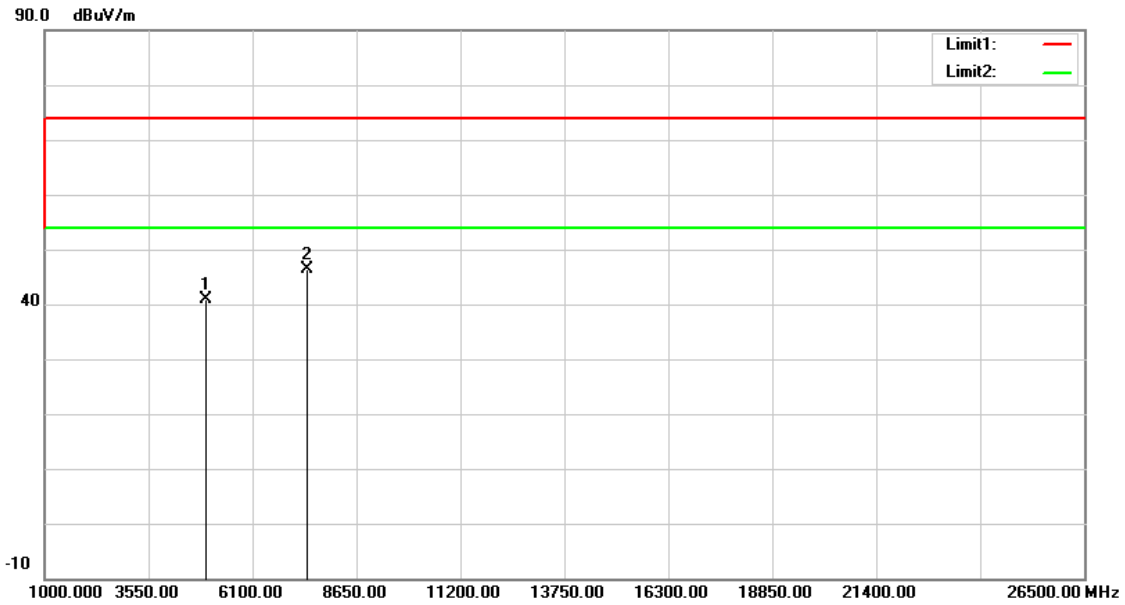
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	34.74	5.64	40.38	74.00	-33.62	peak
2	7440.000	34.75	12.53	47.28	74.00	-26.72	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2480 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



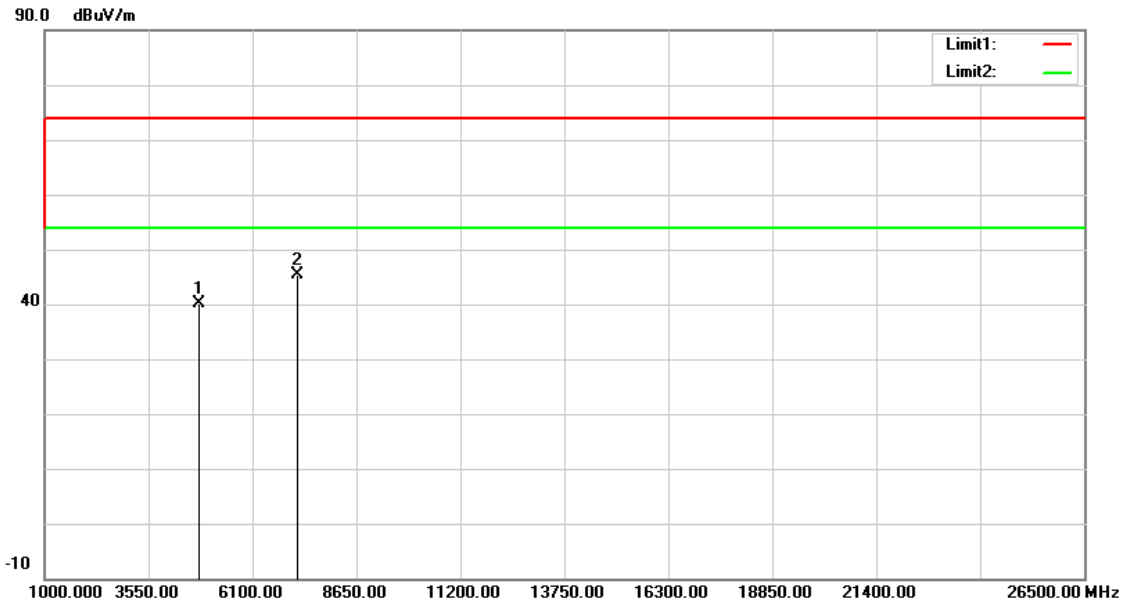
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	35.21	5.64	40.85	74.00	-33.15	peak
2	7440.000	33.95	12.53	46.48	74.00	-27.52	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



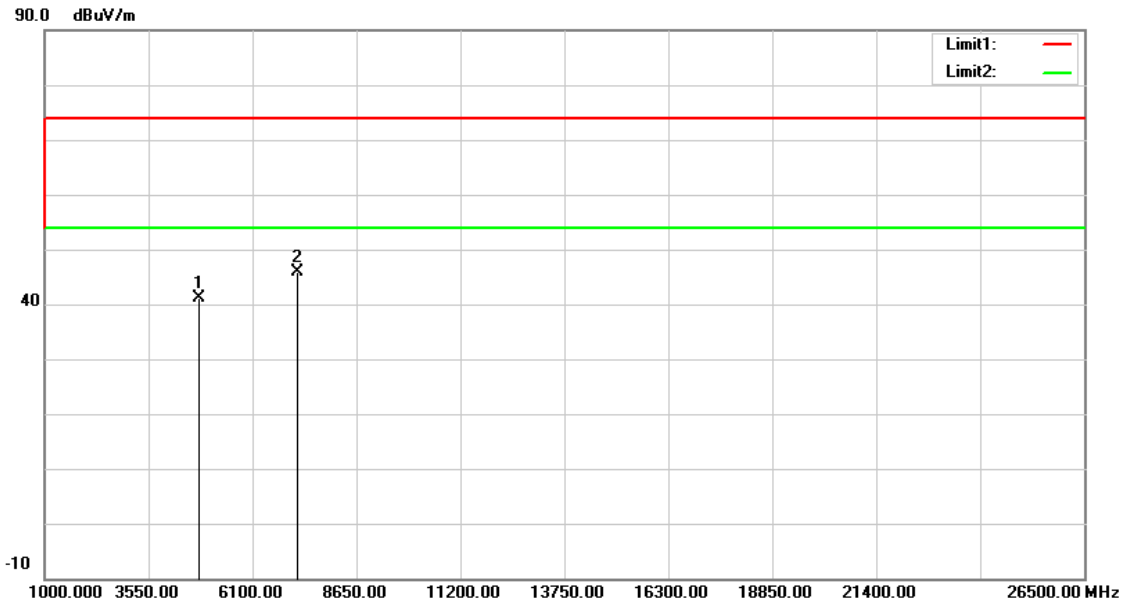
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804.000	34.90	5.33	40.23	74.00	-33.77	peak
2	7206.000	33.70	11.79	45.49	74.00	-28.51	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Vertical		



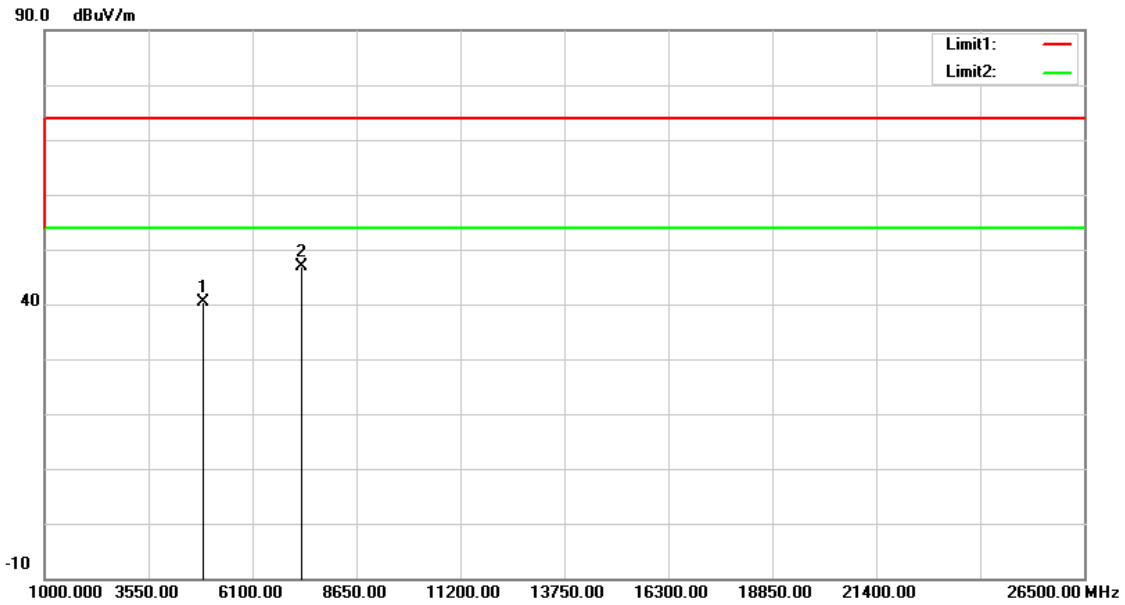
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4804.000	35.88	5.33	41.21	74.00	-32.79	peak
2	7206.000	34.14	11.79	45.93	74.00	-28.07	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2441 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



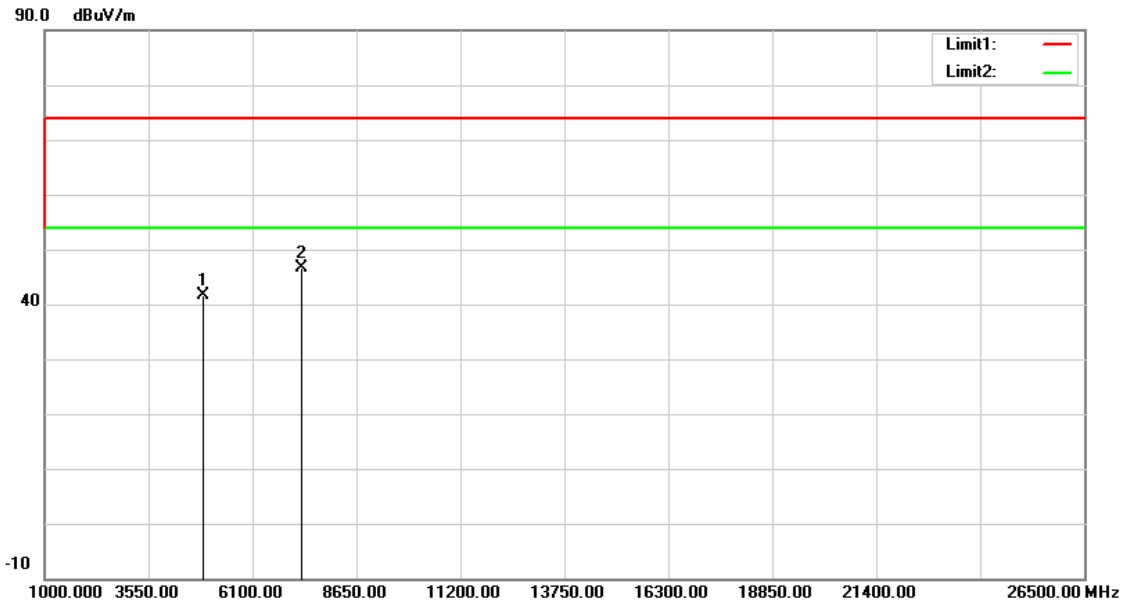
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4882.000	34.91	5.48	40.39	74.00	-33.61	peak
2	7323.000	34.61	12.17	46.78	74.00	-27.22	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2441 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Vertical		



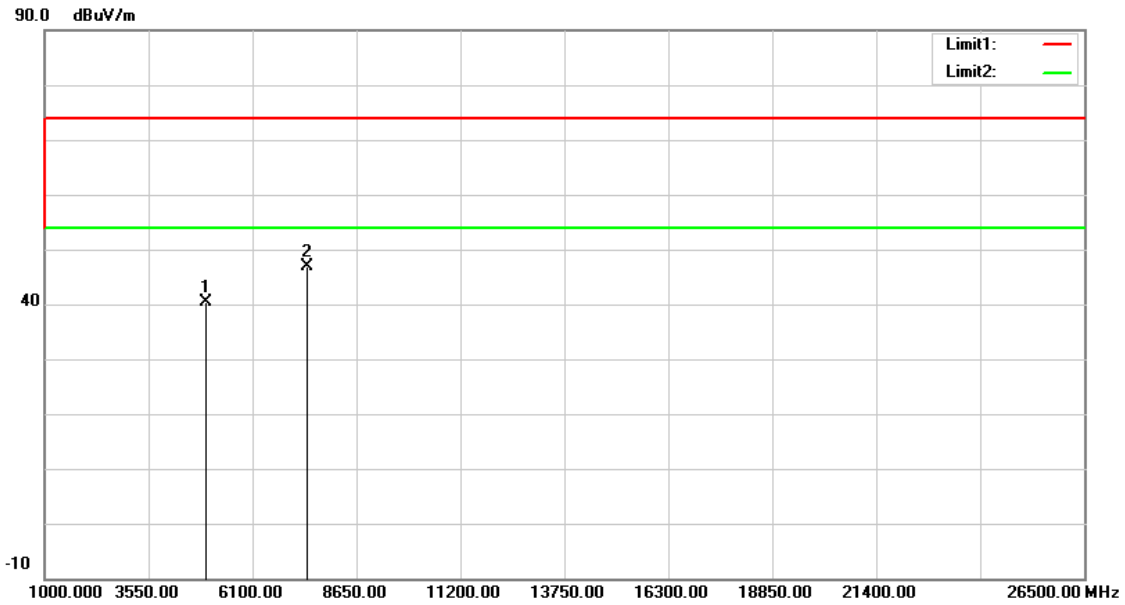
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4882.000	36.06	5.48	41.54	74.00	-32.46	peak
2	7323.000	34.38	12.17	46.55	74.00	-27.45	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2480 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



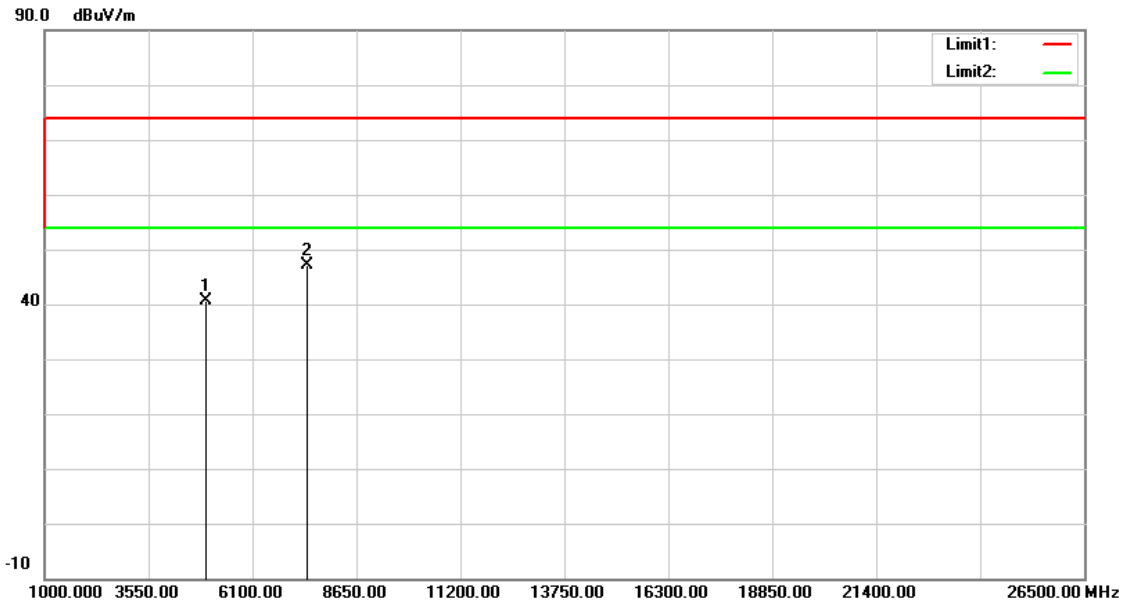
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	34.67	5.64	40.31	74.00	-33.69	peak
2	7440.000	34.29	12.53	46.82	74.00	-27.18	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Frequency:	2480 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Vertical		



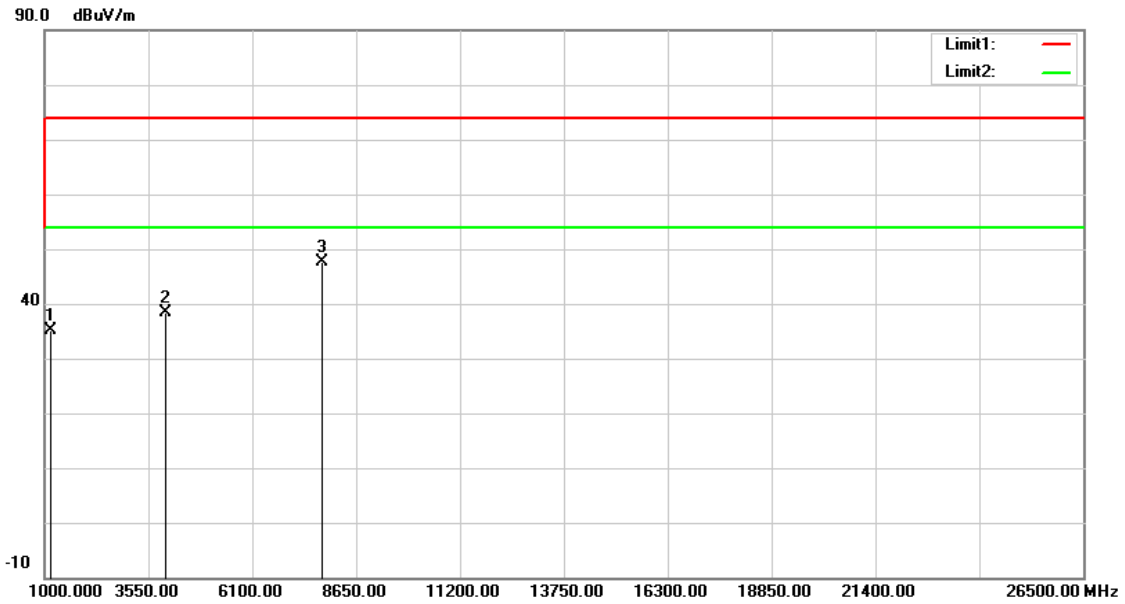
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	35.00	5.64	40.64	74.00	-33.36	peak
2	7440.000	34.48	12.53	47.01	74.00	-26.99	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3.When the peak results are less than average limit, so not need to evaluate the average.

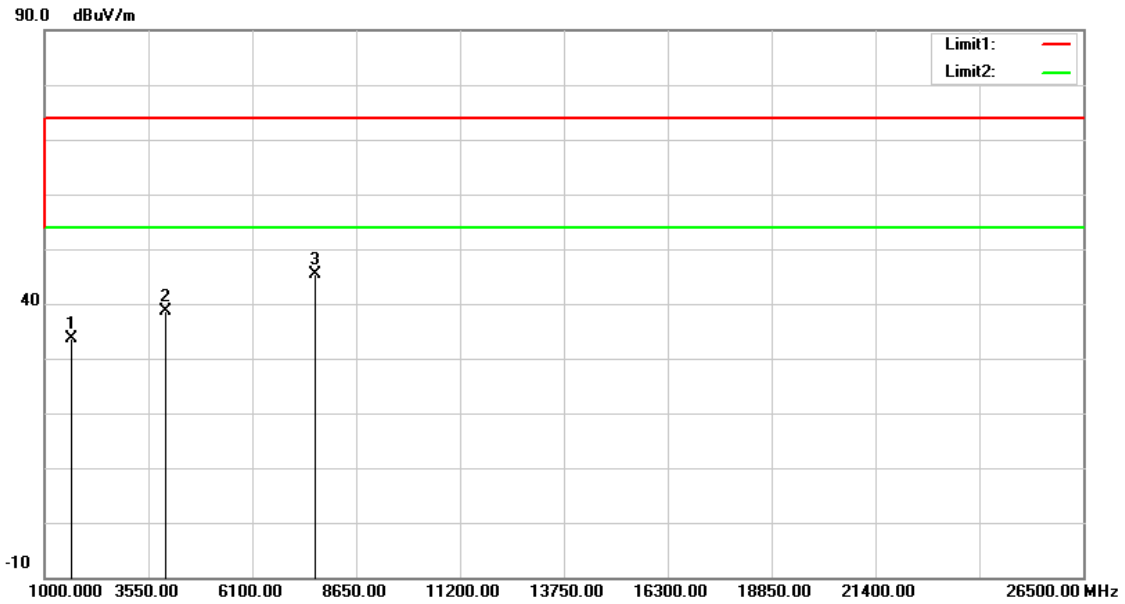
Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Mode:	Simultaneous Transmitting (WLAN 2.4 GHz+Bluetooth)	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1136.000	41.84	-6.64	35.20	74.00	-38.80	peak
2	3975.000	35.65	2.77	38.42	74.00	-35.58	peak
3	7800.000	34.39	13.19	47.58	74.00	-26.42	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

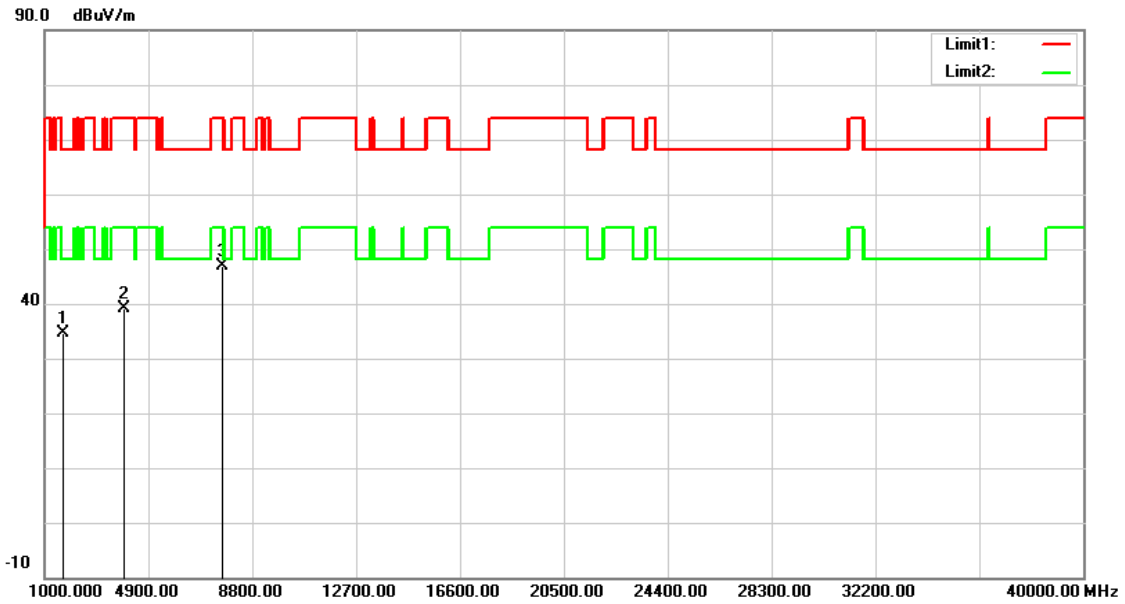
Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Mode:	Simultaneous Transmitting (WLAN 2.4 GHz+Bluetooth)	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1663.000	38.12	-4.38	33.74	74.00	-40.26	peak
2	3941.000	35.95	2.64	38.59	74.00	-35.41	peak
3	7647.000	32.52	12.93	45.45	74.00	-28.55	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

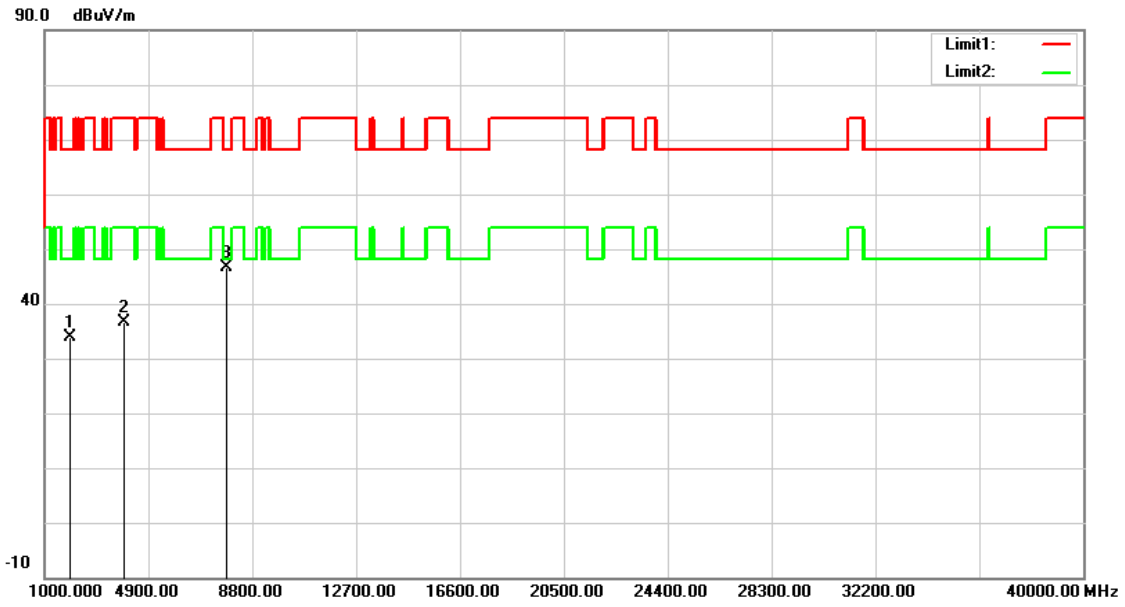
Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Mode:	Simultaneous Transmitting (WLAN 5 GHz+Bluetooth)	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1697.000	38.87	-4.25	34.62	68.20	-33.58	peak
2	3958.000	36.38	2.71	39.09	74.00	-34.91	peak
3	7664.000	33.95	12.95	46.90	74.00	-27.10	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

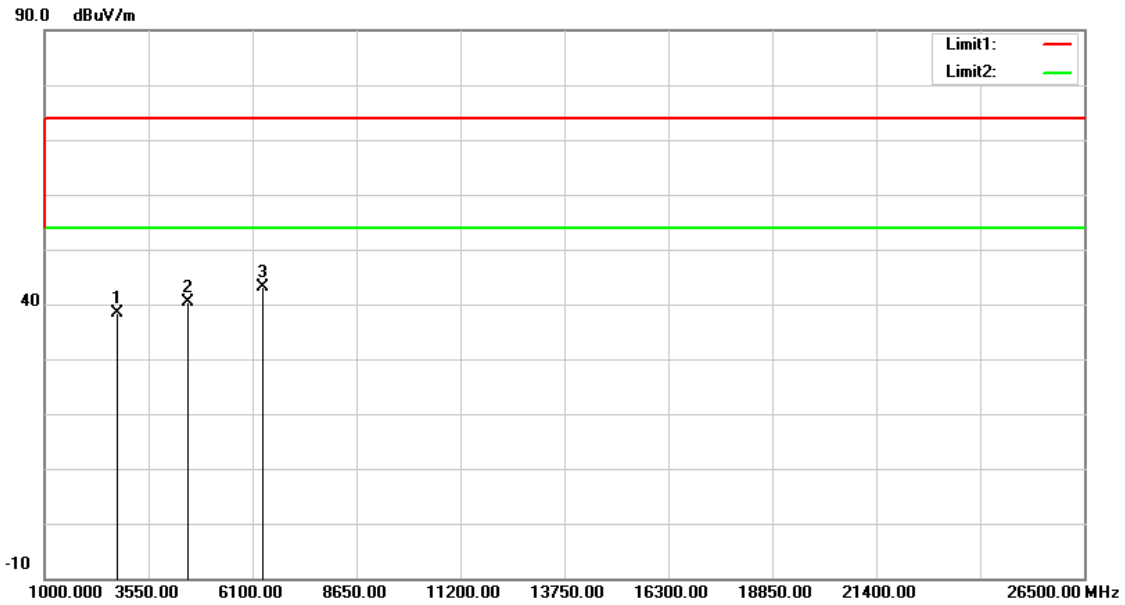
Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Mode:	Simultaneous Transmitting (WLAN 5 GHz+Bluetooth)	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1935.000	37.29	-3.34	33.95	68.20	-34.25	peak
2	3941.000	34.04	2.64	36.68	74.00	-37.32	peak
3	7817.000	33.29	13.22	46.51	68.20	-21.69	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

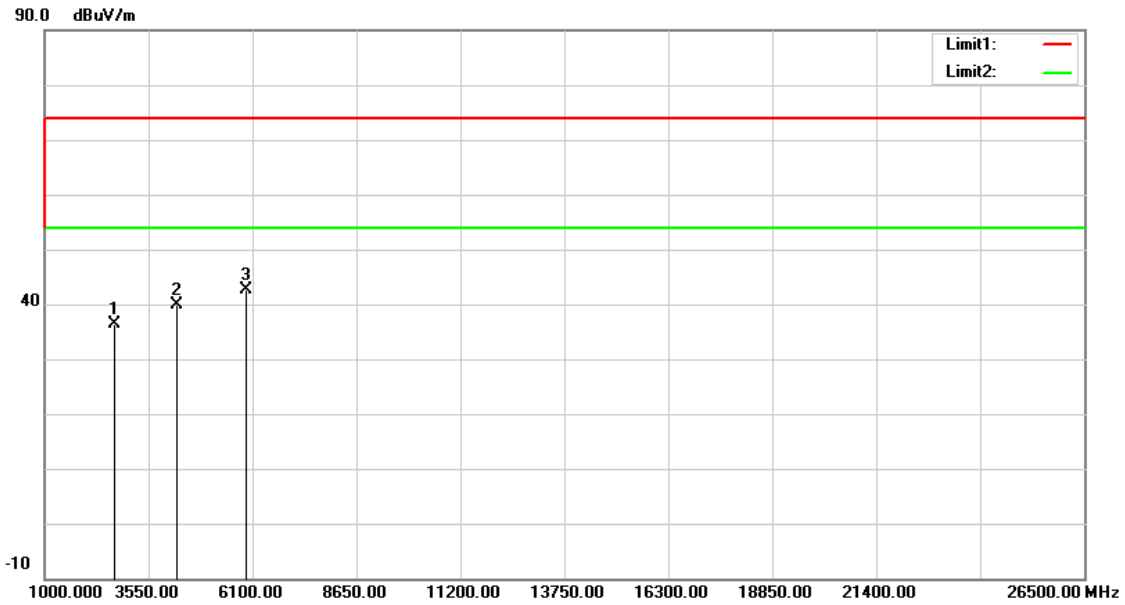
Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Mode:	Mode 5	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Ant.Polar.:	Horizontal		
Description:			



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2785.000	38.34	0.07	38.41	74.00	-35.59	peak
2	4519.000	35.67	4.75	40.42	74.00	-33.58	peak
3	6338.000	33.80	9.29	43.09	74.00	-30.91	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Harmonic	Power:	DC 12 V
Mode:	Mode 5	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Ant.Polar.:	Vertical		
Description:			



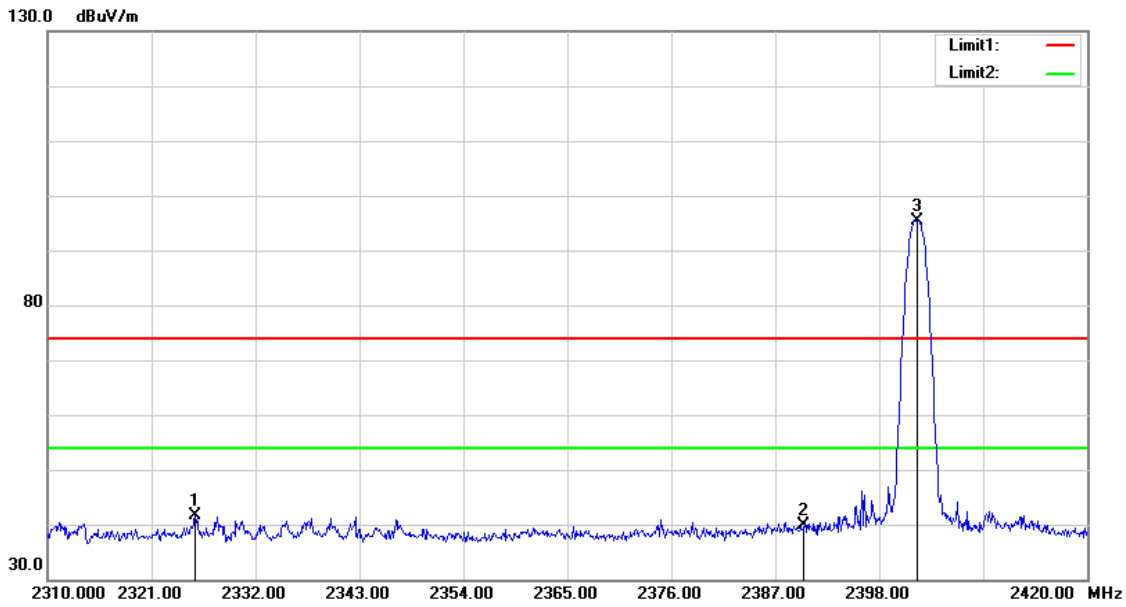
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2717.000	36.54	-0.14	36.40	74.00	-37.60	peak
2	4247.000	36.06	3.85	39.91	74.00	-34.09	peak
3	5947.000	34.89	7.80	42.69	74.00	-31.31	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

頻帶邊緣

附註: 其上下邊緣落於低功率射頻電機第 2.7 節所列頻帶內之混附發射，其電場強度必須符合第 2.8 節的限制規定。

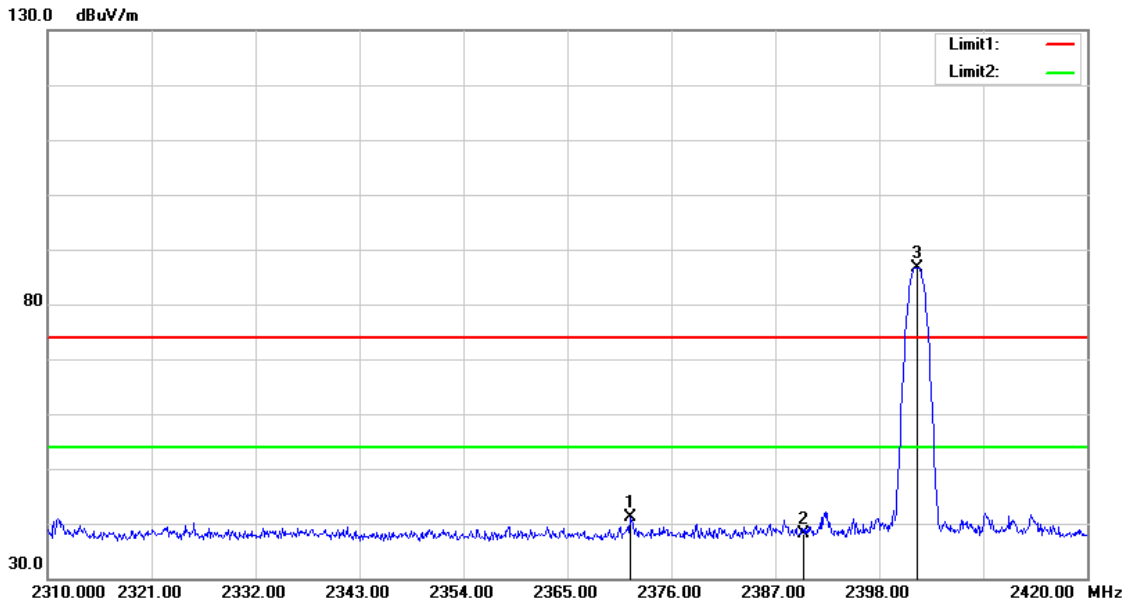
Standard:	LP0002	Test Distance:	3 m
Test item:	Band edge	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2325.620	43.12	-1.40	41.72	74.00	-32.28	peak
2	2390.000	40.98	-1.17	39.81	74.00	-34.19	peak
3	2402.000	96.51	-1.12	95.39	--	--	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

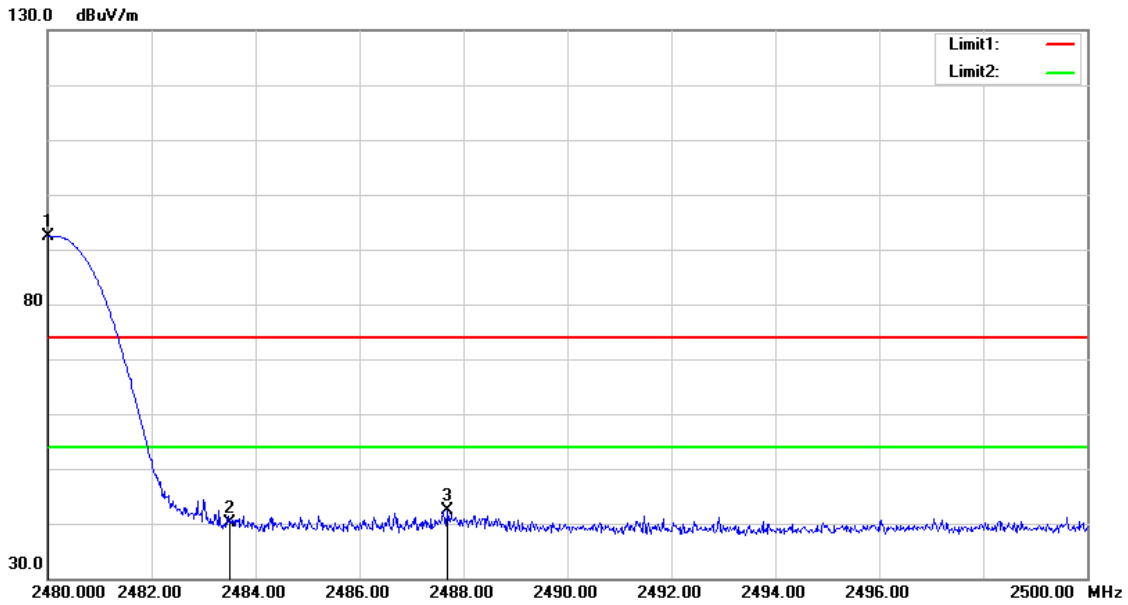
Standard:	LP0002	Test Distance:	3 m
Test item:	Band edge	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2371.710	42.47	-1.22	41.25	74.00	-32.75	peak
2	2390.000	39.18	-1.17	38.01	74.00	-35.99	peak
3	2402.000	87.84	-1.12	86.72	--	--	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

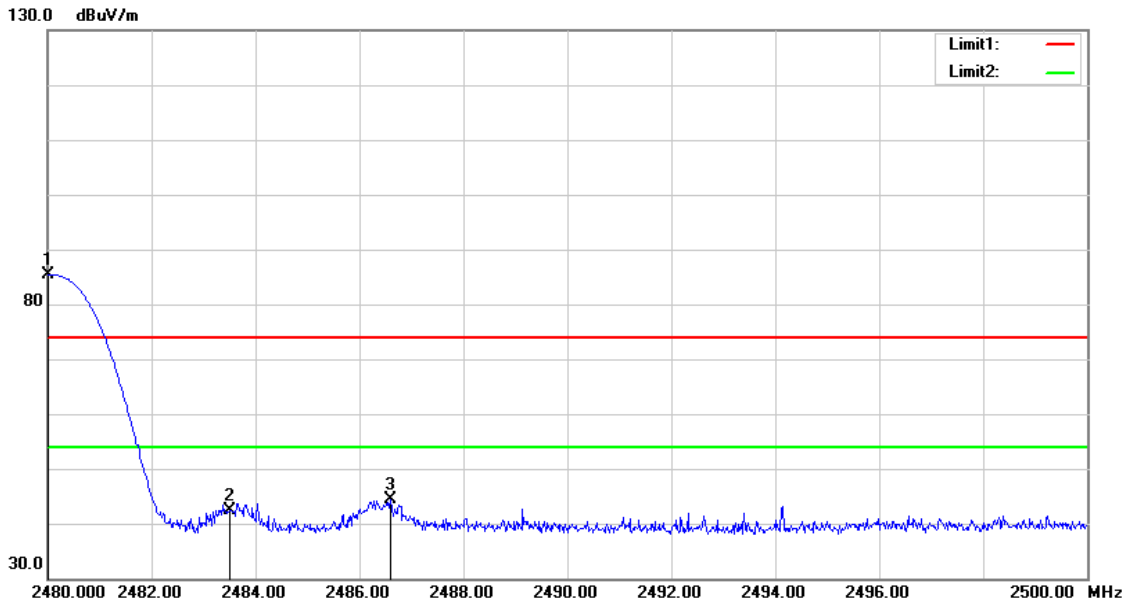
Standard:	LP0002	Test Distance:	3 m
Test item:	Band edge	Power:	DC 12 V
Frequency:	2480 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	93.25	-0.83	92.42	--	--	peak
2	2483.500	40.90	-0.82	40.08	74.00	-33.92	peak
3	2487.680	43.25	-0.80	42.45	74.00	-31.55	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

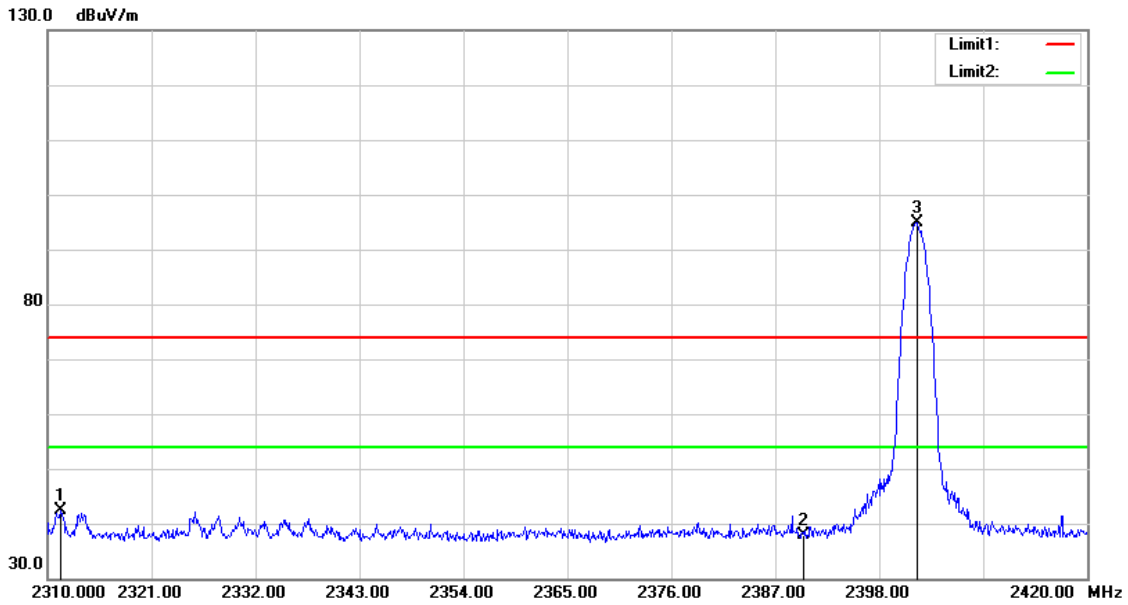
Standard:	LP0002	Test Distance:	3 m
Test item:	Band edge	Power:	DC 12 V
Frequency:	2480 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 2		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	86.16	-0.83	85.33	--	--	peak
2	2483.500	43.19	-0.82	42.37	74.00	-31.63	peak
3	2486.600	45.18	-0.81	44.37	74.00	-29.63	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

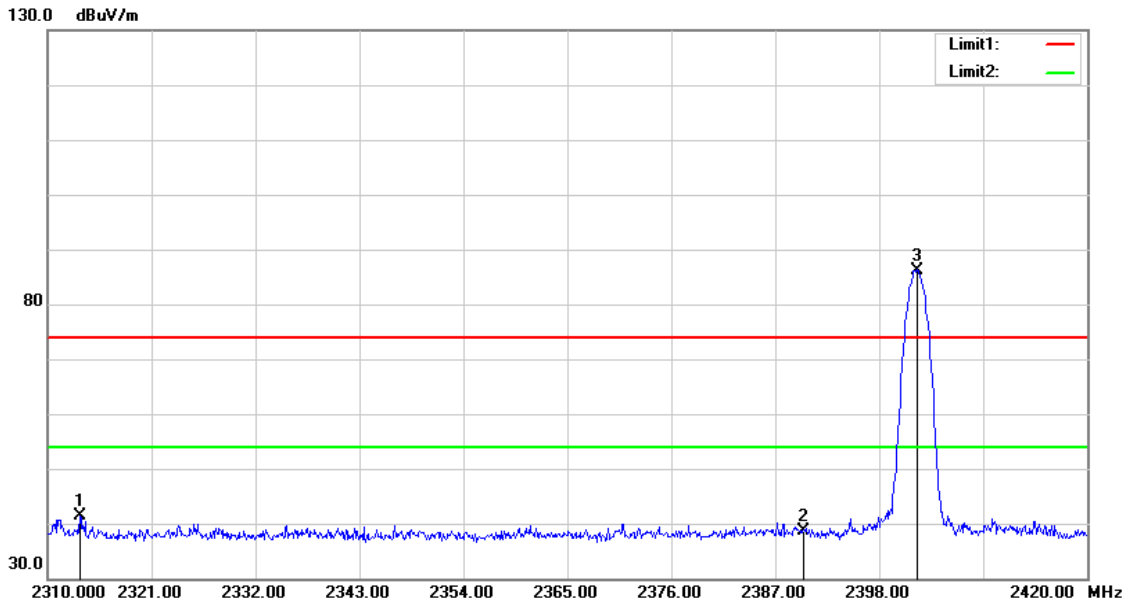
Standard:	LP0002	Test Distance:	3 m
Test item:	Band edge	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2311.320	43.80	-1.45	42.35	74.00	-31.65	peak
2	2390.000	39.07	-1.17	37.90	74.00	-36.10	peak
3	2402.000	95.97	-1.12	94.85	--	--	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

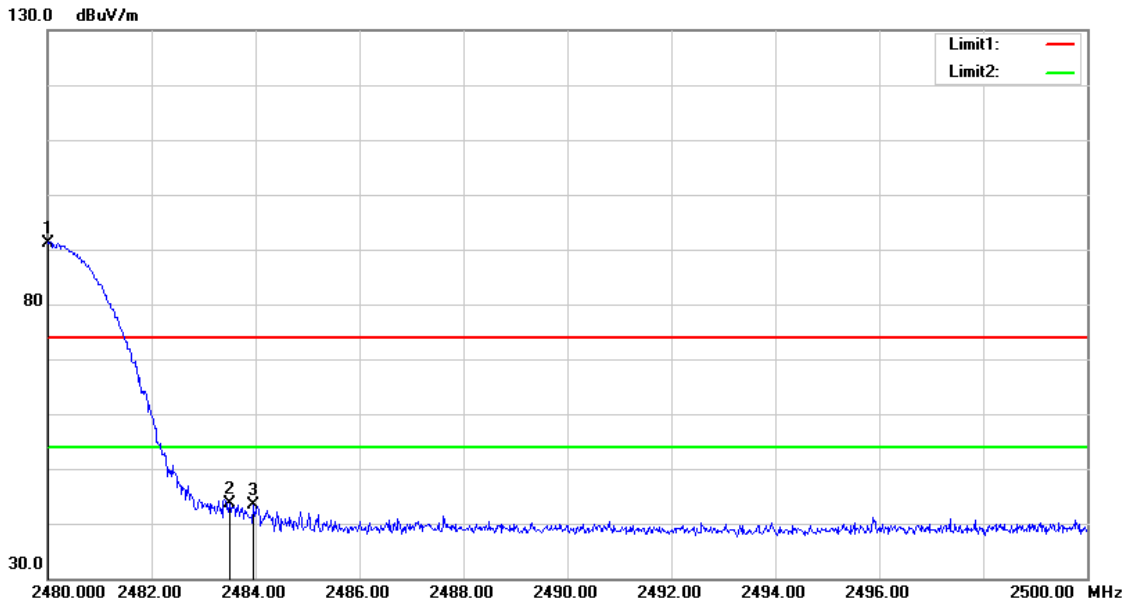
Standard:	LP0002	Test Distance:	3 m
Test item:	Band edge	Power:	DC 12 V
Frequency:	2402 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2313.410	42.80	-1.45	41.35	74.00	-32.65	peak
2	2390.000	39.81	-1.17	38.64	74.00	-35.36	peak
3	2402.000	87.17	-1.12	86.05	--	--	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

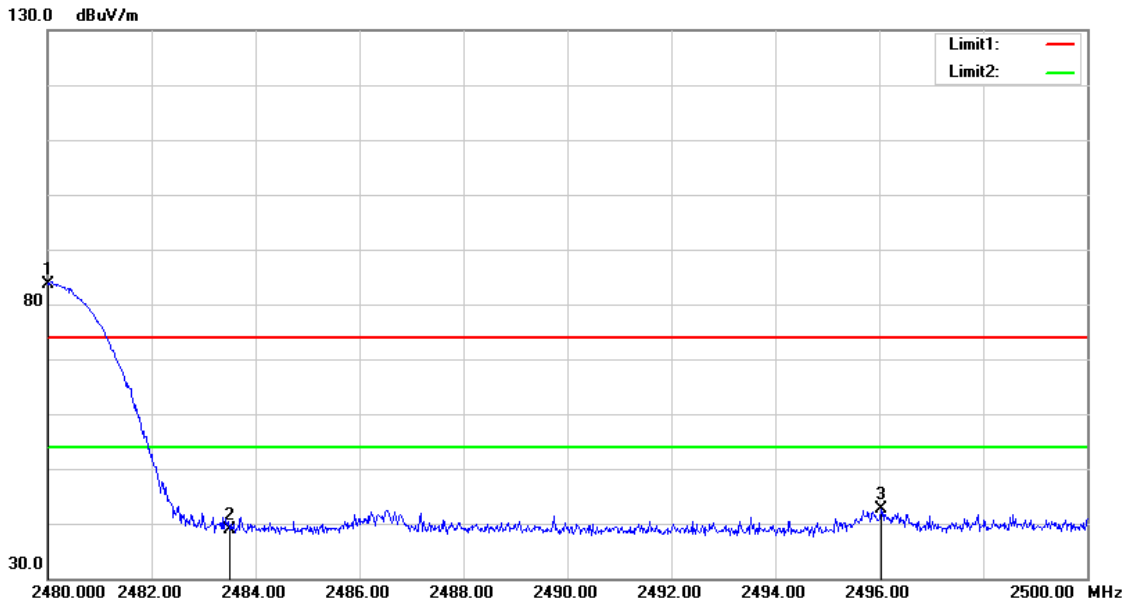
Standard:	LP0002	Test Distance:	3 m
Test item:	Band edge	Power:	DC 12 V
Frequency:	2480 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	92.02	-0.83	91.19	--	--	peak
2	2483.500	44.41	-0.82	43.59	74.00	-30.41	peak
3	2483.960	44.22	-0.82	43.40	74.00	-30.60	peak

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

Standard:	LP0002	Test Distance:	3 m
Test item:	Band edge	Power:	DC 12 V
Frequency:	2480 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	Mode 4		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.000	84.44	-0.83	83.61	--	--	peak
2	2483.500	39.78	-0.82	38.96	74.00	-35.04	peak
3	2496.040	43.43	-0.77	42.66	74.00	-31.34	peak

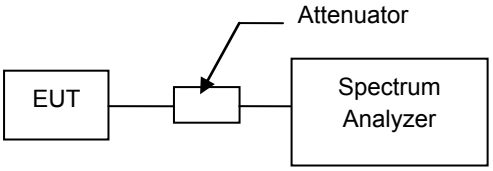
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).
3.When the peak results are less than average limit, so not need to evaluate the average.

4.4 非必要頻帶之量測

合格標準:

發射限制： 使用頻帶範圍外之任意 100 千赫 (kHz)內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100 千赫 (kHz)內的射頻功率，須衰減 20 分貝(dB)，以射頻傳導或輻射方式測量。

測試架構圖 ：



測試結果:

操作模式	： Mode 2: BR,GFSK Continuous TX Mode Mode 4: EDR, 8DPSK Continuous TX Mode
測試結果	： 合格
量測之結果掃圖如下頁所示	

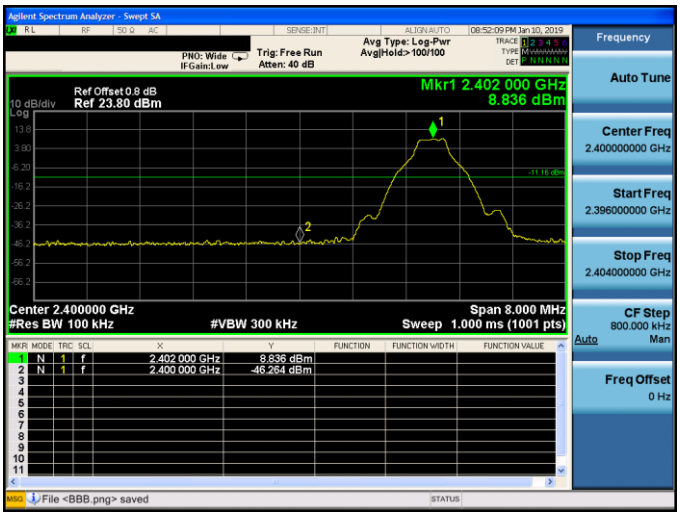
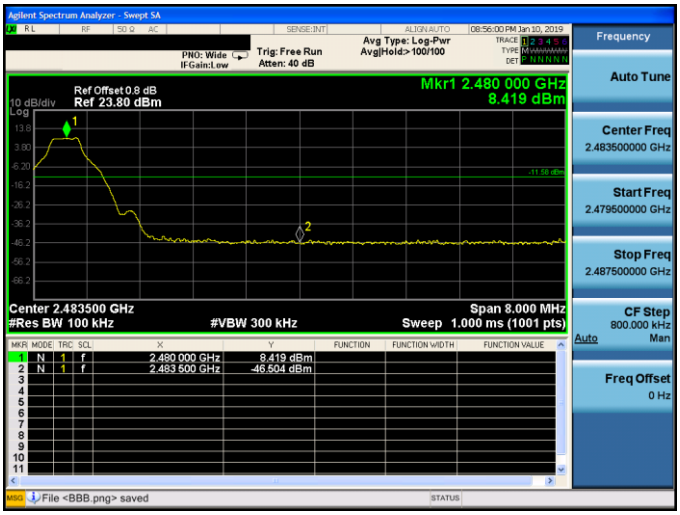
附註 1: 於使用頻帶範圍之任意 100 千赫 (kHz)內，發射器所產生的射頻功率相較於使用頻帶範圍中包含最高所需功率之 100 千赫 (kHz)內的射頻功率，衰減 20 分貝(dB)以上，符合規定。

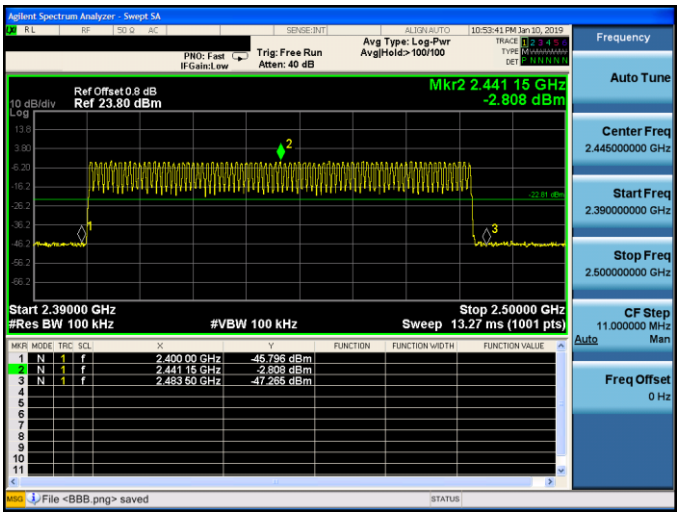
附註 2: 測試結果頻帶外之輻射雜訊皆小於主頻 TX 20 dB。

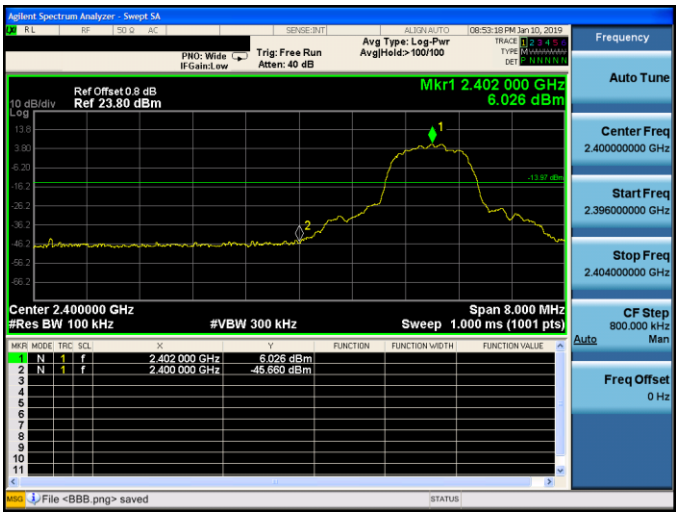
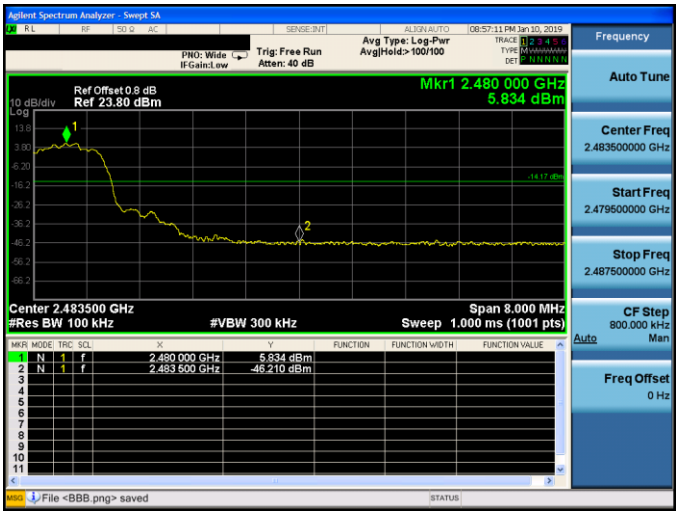
Mode 2: BR,GFSK Continuous TX Mode	
低頻道	
中頻道	
高頻道	

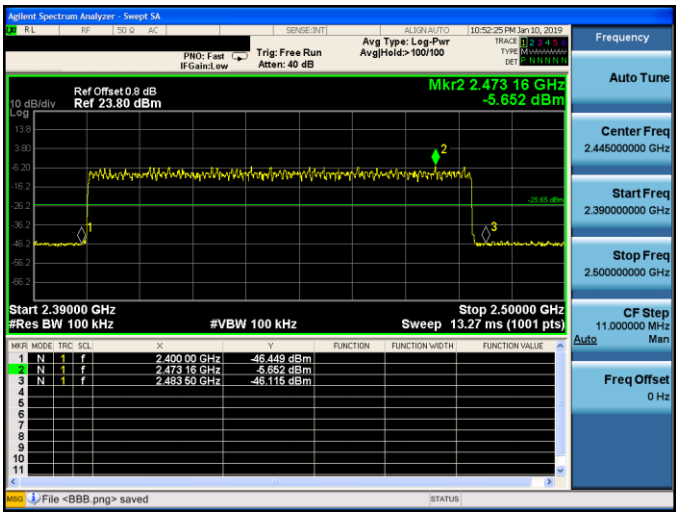
Mode 4: EDR, 8DPSK Continuous TX Mode	
低頻道	
中頻道	
高頻道	

Conducted Band Edge

Mode 2: BR,GFSK Continuous TX Mode	
低頻道	
高頻道	

Mode 2: BR,GFSK Continuous TX Mode	
低頻道-高頻道	

Mode 4: EDR, 8DPSK Continuous TX Mode	
低頻道	
高頻道	

Mode 4: EDR, 8DPSK Continuous TX Mode	
低頻道-高頻道	

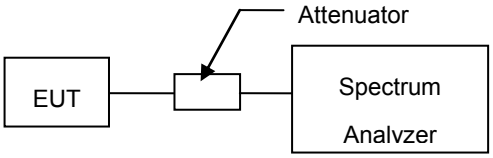
4.5 頻率範圍之要求

合格標準:

依據NCC低功率射頻電機技術規範(LP0002)之3.10.1.1節之要求，允許使用的頻率範圍為2400至2483.5 MHz。

測試架構圖 :

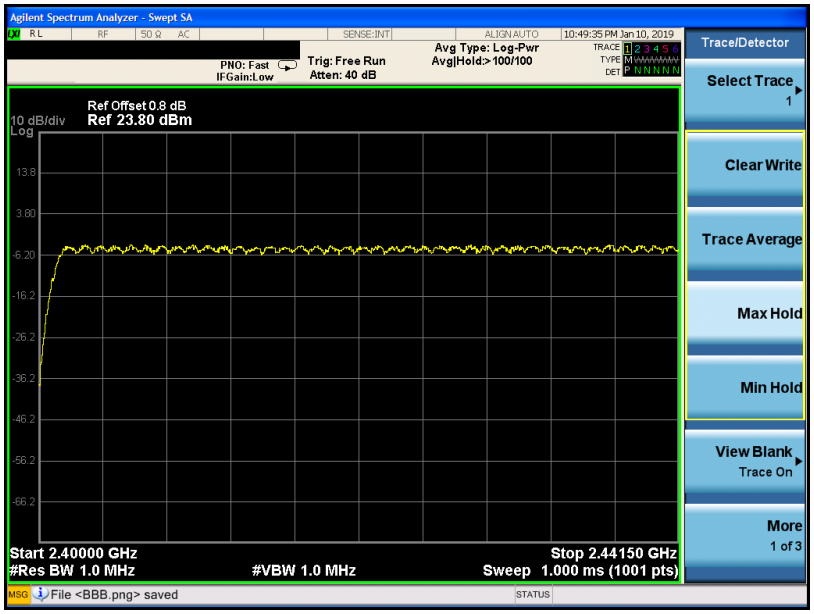
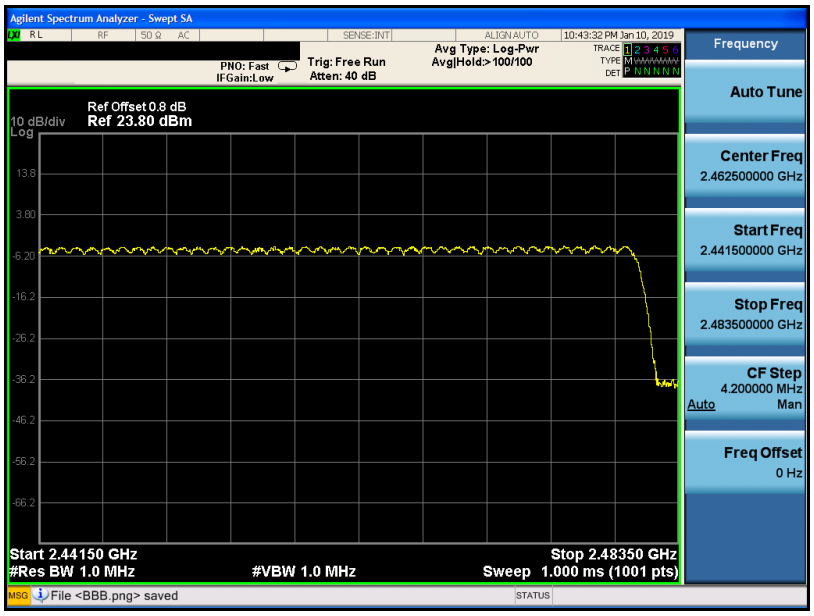
測試場地測試配置如圖所示。



測試結果:

操作模式	: Mode 2: BR, GFSK Continuous TX Mode Mode 4: EDR, 8DPSK Continuous TX Mode
測試結果	: 合格
量測之掃描圖如下頁所示	

Mode 2: BR, GFSK Continuous TX Mode	
CH00 - CH39	
CH39- CH78	

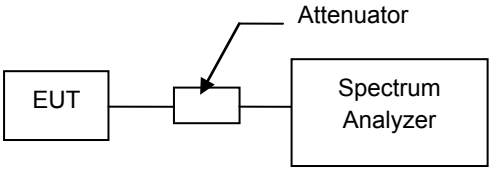
Mode 4: EDR, 8DPSK Continuous TX Mode	
CH00 - CH39	
CH39- CH78	

4.6 發射頻寬之要求

合格標準:

對跳頻系統(Frequency Hopping System)而言，，依據 NCC 低功率射頻電機技術規範 3.10.1.6(1)(A)節之要求，跳頻系統之載波頻率頻道間隔應至少 25 千赫(kHz)或跳頻頻道 20dB 頻寬之三分之二，兩者取較寬者。系統之跳頻頻道應依虛擬亂數排列，在各頻率之跳頻頻道上跳躍。每一發射機必須均等的使用每一頻率。系統接收機應具有與發射機跳躍頻道頻寬相匹配之輸入頻寬，且應隨所發射的信號同步偏移接收頻率。

測試架構圖 ：



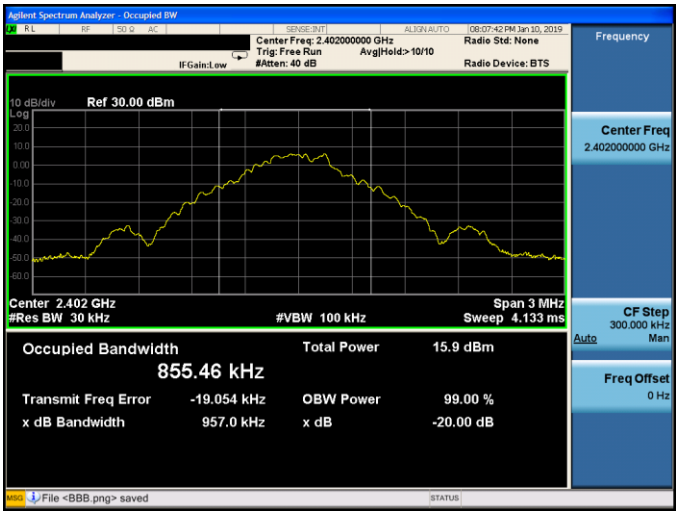
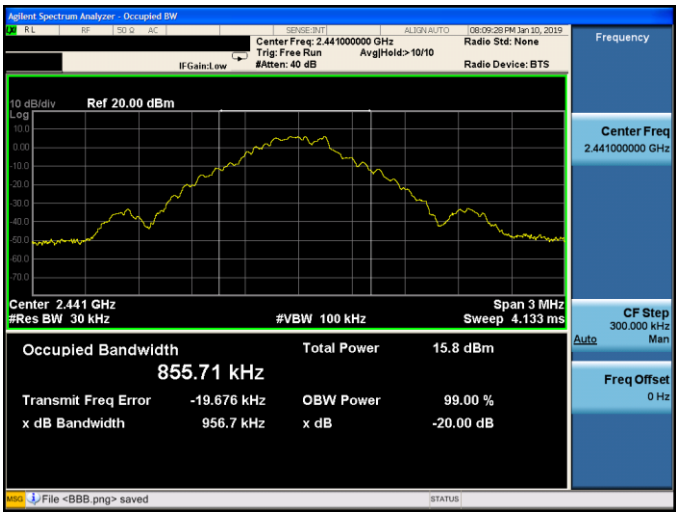
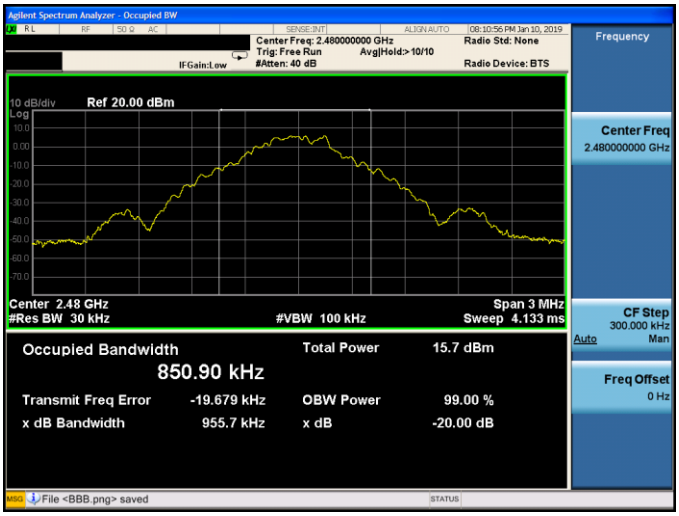
測試結果:

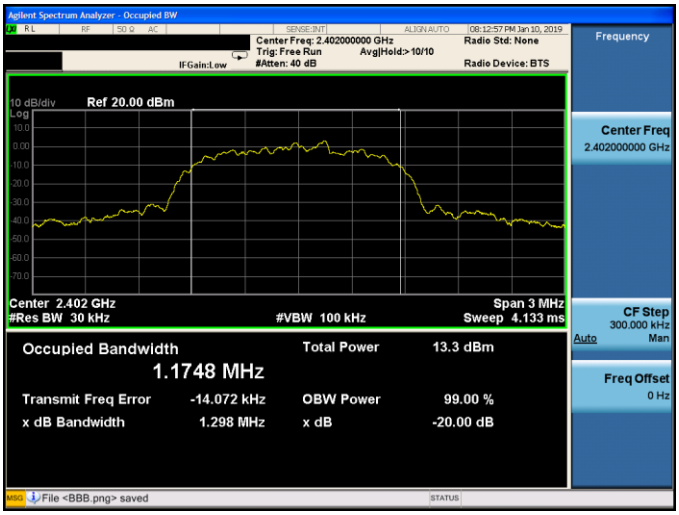
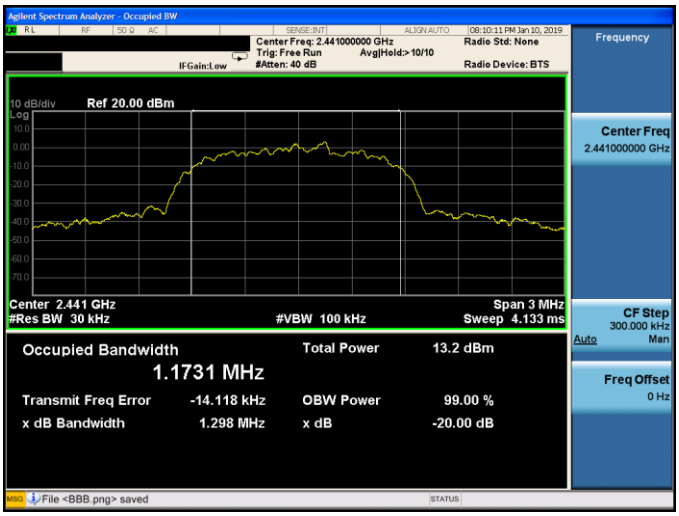
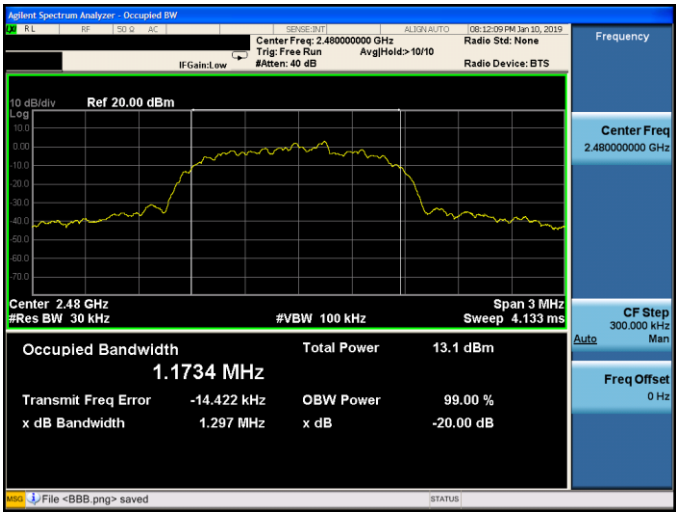
操作模式	頻道	發射頻寬(20 dB)		
		量測值 (MHz)	2/3 量測值 (MHz)	限制值 (MHz)
Mode 2	低頻道	0.957	0.638	-----
	中頻道	0.956	0.637	-----
	高頻道	0.956	0.637	-----
Mode 4	低頻道	1.298	0.865	-----
	中頻道	1.298	0.865	-----
	高頻道	1.297	0.865	-----

操作模式 ： Mode 2: BR, GFSK Continuous TX Mode
Mode 4: EDR, 8DPSK Continuous TX Mode

註: 發射頻寬(20 dB) 之 2/3 量測值 = 量測值 x 2 / 3

測試掃描圖請參考下頁。

Mode 2: BR, GFSK Continuous TX Mode	
低頻道	
中頻道	
高頻道	

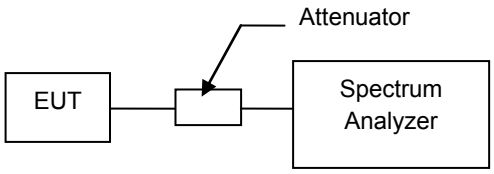
Mode 4: EDR,8DPSK Continuous TX Mode	
低頻道	
中頻道	
高頻道	

4.7 頻道數之要求

合格標準:

對跳頻系統(Frequency Hopping System)而言,依據 NCC 低功率射頻電機技術規範(LP0002)之3.10.1.6(1)(A)(a)節之要求，至少使用 15 個無重疊之頻道(複合系統時,關閉數位調變作業狀態檢驗)。

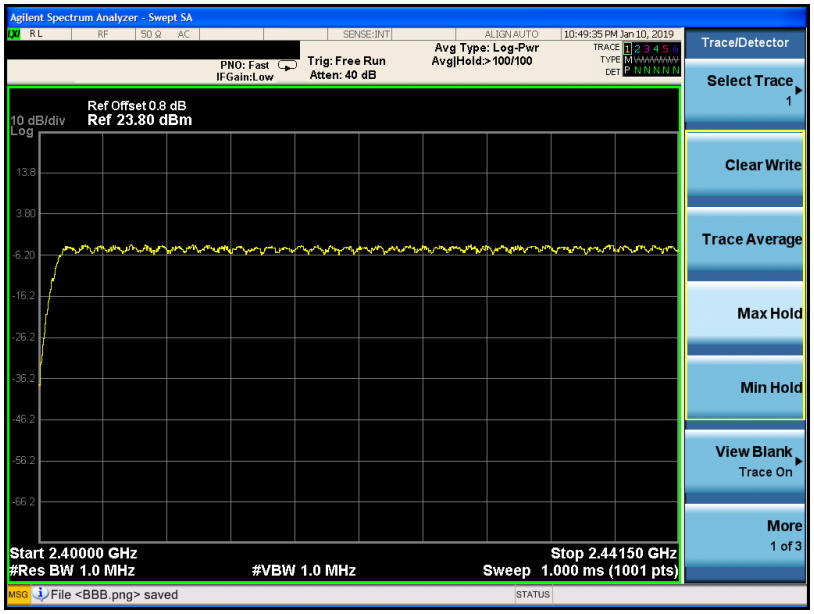
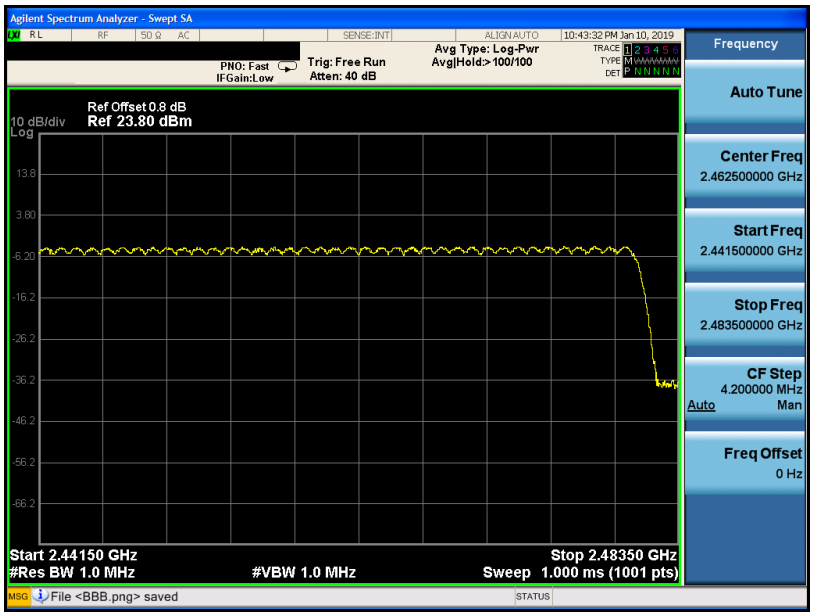
測試架構圖 ：



測試結果:

操作模式	： Mode 2: BR, GFSK Continuous TX Mode Mode 4: EDR, 8DPSK Continuous TX Mode
測試結果	： 合格
量測之掃描圖如下頁所示	

Mode 2: BR, GFSK Continuous TX Mode	
CH00 - CH39	
CH39- CH78	

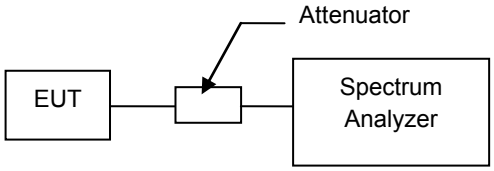
Mode 4: EDR, 8DPSK Continuous TX Mode	
CH00 - CH39	
CH39- CH78	

4.8 跳頻系統之載波頻率頻道間隔之量測

合格標準:

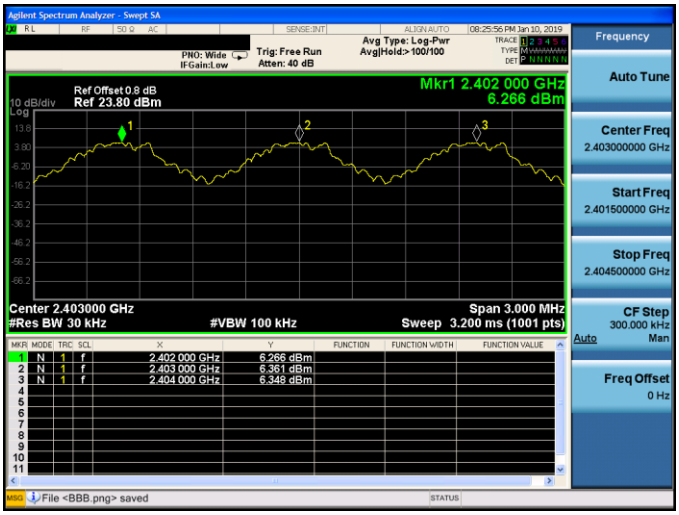
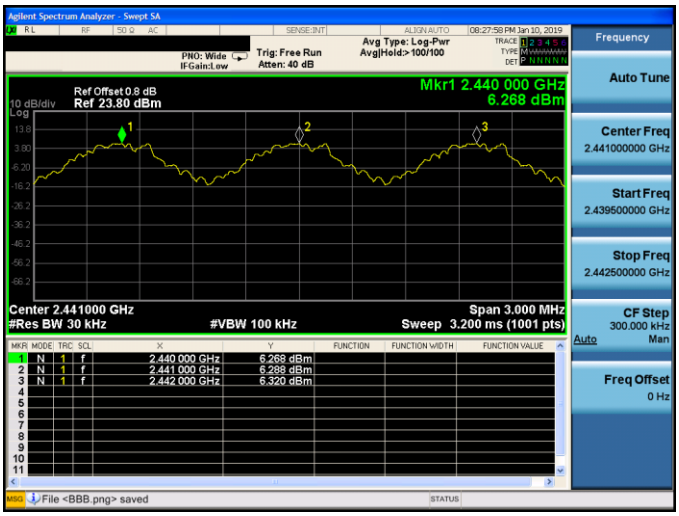
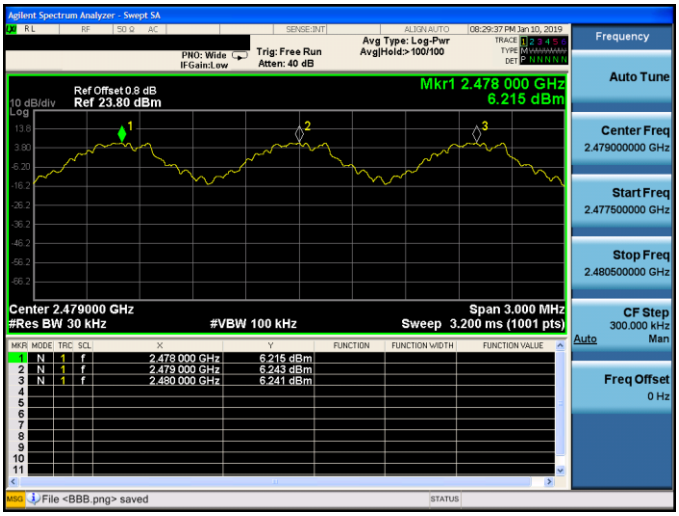
依據 NCC 低功率射頻電機技術規範(LP0002) 之 3.10.1.6(1)(A)節要求，應至少 25kHz 或跳頻頻道之 20 dB 頻寬之三分之二,兩者取較寬者。

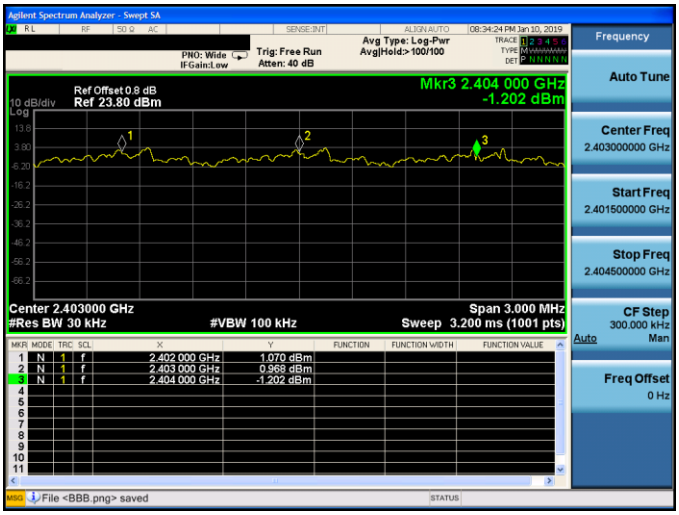
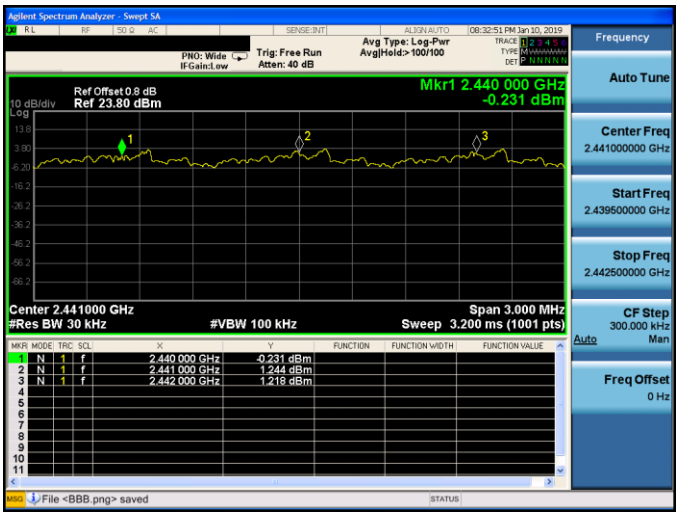
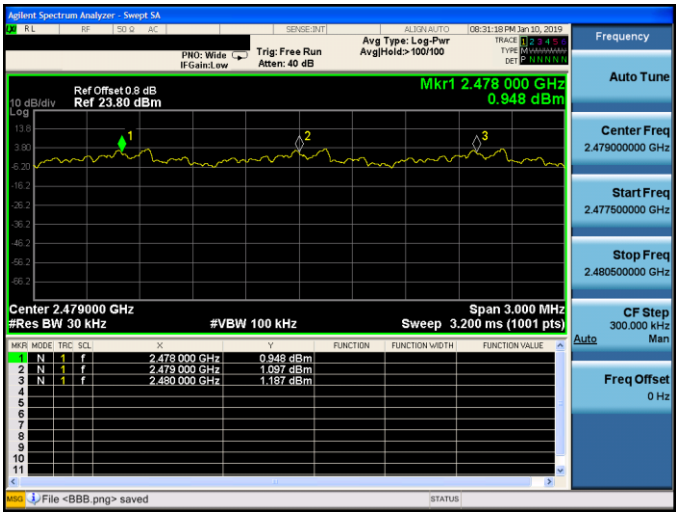
測試架構圖 :



測試結果:

操作模式	:	Mode 2: BR, GFSK Continuous TX Mode Mode 4: EDR, 8DPSK Continuous TX Mode	
操作模式	頻道	鄰頻道載波間隔	
		量測值 (MHz)	限制值 (MHz)
Mode 2	低頻道	1.000	≥ 0.638
	中頻道	1.000	≥ 0.637
	高頻道	1.000	≥ 0.637
Mode 4	低頻道	1.000	≥ 0.865
	中頻道	1.000	≥ 0.865
	高頻道	1.000	≥ 0.865

Mode 2: BR, GFSK Continuous TX Mode	
低頻道	
中頻道	
高頻道	

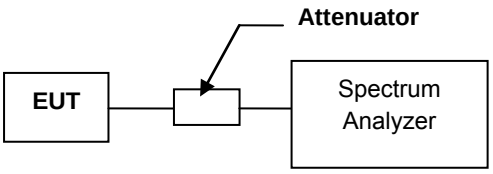
Mode 4: EDR, 8DPSK Continuous TX Mode	
低頻道	
中頻道	
高頻道	

4.9 跳頻系統之任一頻率佔用之平均時間之量測

合格標準:

依據 NCC 低功率射頻電機技術規範(LP0002)之 3.10.1.6(1)(A)(a)節之要求，若使用 15 個無重疊之頻道,在 0.4 秒乘以跳頻頻道數之週期內,任一頻道佔用之平均時間不得超過 0.4 秒(複合系統時, 關閉跳頻作業狀態檢驗)。

測試架構圖 :

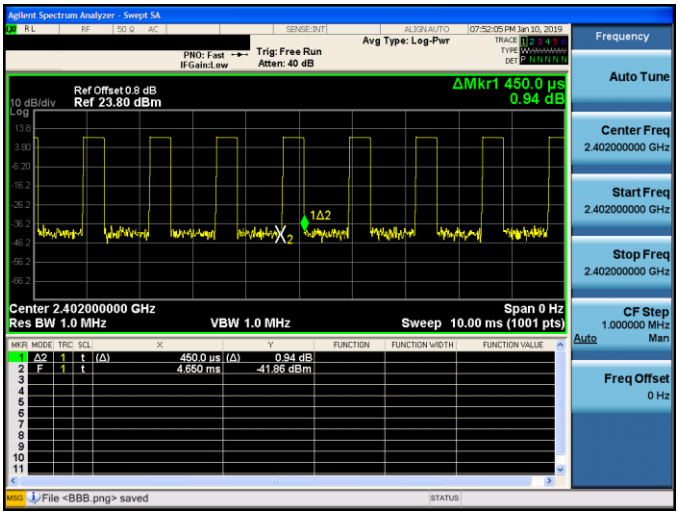
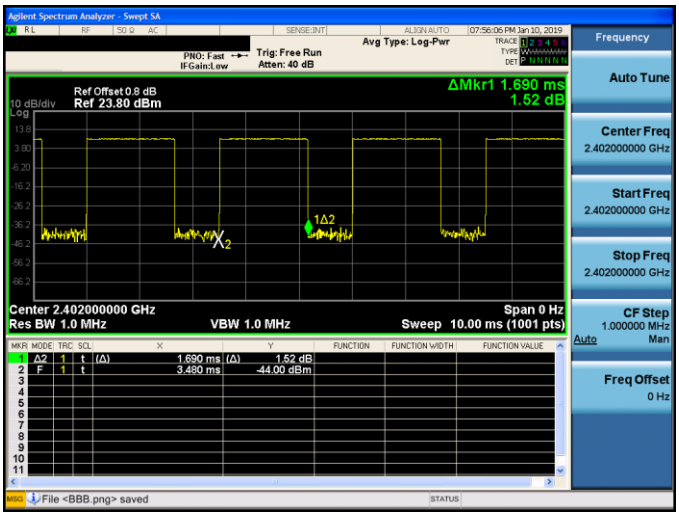
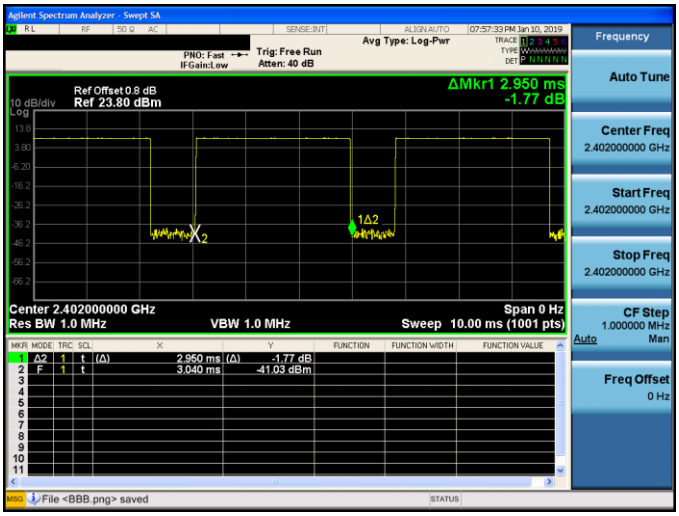


測試結果:

操作模式	:	Mode 2: BR, GFSK Continuous TX Mode Mode 4: EDR, 8DPSK Continuous TX Mode
測試結果	:	合格
此項測試進行量測高中低頻道,取其最大值紀錄於此量測結果, 量測之結果數據如下頁所示。		

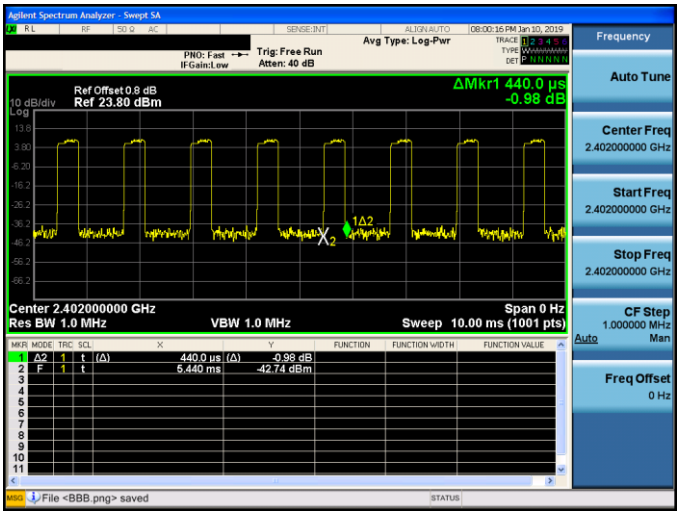
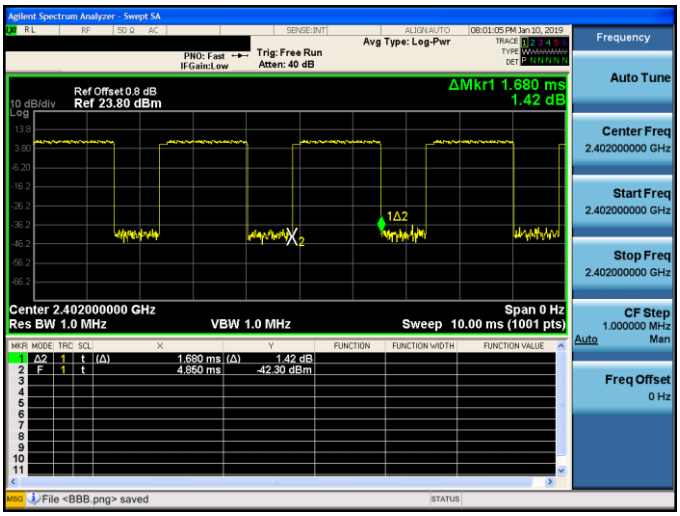
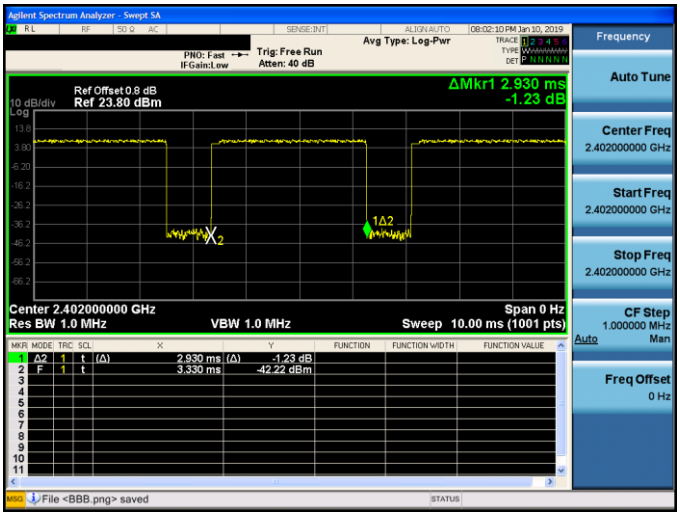
Mode 2: BR, GFSK Continuous TX Mode	
DH1 模式	
需量測之週期(秒)	79CH * 0.4 = 31.6 (秒)
待測物每秒跳頻之總次數	1600(藍芽通訊協定標準)
頻道每秒佔用之次數	800/79CH = 10.13(次/秒)
頻道每次佔用之時間(1)	0.450 ms (秒)
週期內頻道佔用之總次數(2)	31.6 * 10.13 = 320.108(次)
週期內佔用的平均時間(1) * (2)	144.049 ms (秒)
LIMIT(msec)	< = 400
DH3 模式	
需量測之週期(秒)	79CH * 0.4 = 31.6 (秒)
待測物每秒跳頻之總次數	1600(藍芽通訊協定標準)
頻道每秒佔用之次數	400/79CH = 5.06(次/秒)
頻道每次佔用之時間(1)	1.690 ms (秒)
週期內頻道佔用之總次數(2)	31.6 * 5.06 = 159.896(次)
週期內佔用的平均時間(1) * (2)	270.224 ms (秒)
LIMIT(msec)	< = 400
DH5 模式	
需量測之週期(秒)	79CH * 0.4 = 31.6 (秒)
待測物每秒跳頻之總次數	1600(藍芽通訊協定標準)
頻道每秒佔用之次數	266.7/79CH = 3.38(次/秒)
頻道每次佔用之時間(1)	2.950 ms (秒)
週期內頻道佔用之總次數(2)	31.6 * 3.38 = 106.808(次)
週期內佔用的平均時間(1) * (2)	315.084 ms (秒)
LIMIT(msec)	< = 400

附註: RB=1 MHz ; VB=1 MHz ; SPAN=0 MHz ; Sweep Time=10 msec

Mode 2: BR, GFSK Continuous TX Mode	
DH1	
DH3	
DH5	

Mode 4: EDR, 8DPSK Continuous TX Mode	
3DH1 模式	
需量測之週期(秒)	79CH * 0.4 = 31.6 (秒)
待測物每秒跳頻之總次數	1600(藍芽通訊協定標準)
頻道每秒佔用之次數	800/79CH = 10.13(次/秒)
頻道每次佔用之時間(1)	0.440 ms (秒)
週期內頻道佔用之總次數(2)	31.6 * 10.13 = 320.108(次)
週期內佔用的平均時間(1) * (2)	140.848 ms (秒)
LIMIT(msec)	< = 400
3DH3 模式	
需量測之週期(秒)	79CH * 0.4 = 31.6 (秒)
待測物每秒跳頻之總次數	1600(藍芽通訊協定標準)
頻道每秒佔用之次數	400/79CH = 5.06(次/秒)
頻道每次佔用之時間(1)	1.680 ms (秒)
週期內頻道佔用之總次數(2)	31.6 * 5.06 = 159.896(次)
週期內佔用的平均時間(1) * (2)	268.625 ms (秒)
LIMIT(msec)	< = 400
3DH5 模式	
需量測之週期(秒)	79CH * 0.4 = 31.6 (秒)
待測物每秒跳頻之總次數	1600(藍芽通訊協定標準)
頻道每秒佔用之次數	266.7/79CH = 3.38(次/秒)
頻道每次佔用之時間(1)	2.930 ms (秒)
週期內頻道佔用之總次數(2)	31.6 * 3.38 = 106.808(次)
週期內佔用的平均時間(1) * (2)	312.947 ms (秒)
LIMIT(msec)	< = 400

附註: RB=1 MHz ; VB=1 MHz 附註: RB=1 MHz ; VB=1 MHz ; SPAN=0 MHz ; Sweep Time=10 msec

Mode 4: EDR, 8DPSK Continuous TX Mode	
3DH1	
3DH3	
3DH5	

4.10 天線規格之要求

合格標準:

依據 NCC 低功率射頻電機技術規範(LP0002)之 3.10.1.3(3)節之要求，除 3.10.1.3(1)及 3.10.1.3(2)外，使用超過 6 dBi 方向增益之發射天線時，應依超過 6 dBi 天線方向增益的 dBi 總量，等量減少最大傳導輸出功率限制值。

依據 NCC 低功率射頻電機技術規範(LP0002)之 3.10.1.4 節之要求，天線之規格不受第 2.2 節規定之限制

判定結果:

符合，本產品使用 **PCB Antenna，最大增益值 -0.4 dBi**。